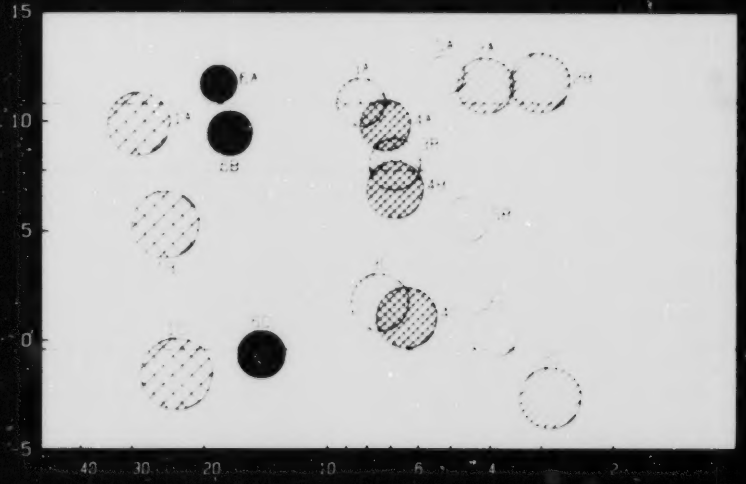
CANADA CAN COMPETE!

Strategic Management of the Canadian Industrial Portfolio

Joseph R. D'Cruz and
James D. Fleck



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CONTENTS

Foreword vi
Avant-Propos viii
The Authors x
Acknowledgments xi
Summary xii
Abrégé xiv
Introduction 1

PART I NATIONAL STRATEGY AND TOP-DOWN DIAGNOSIS

Chapter 1 A National Strategy Framework 3
Chapter 2 Where Canada Stands 10
Chapter 3 A Differentiated Industrial Strategy for Canada 28
Chapter 4 Dynamic Comparative Advantage 34
Chapter 5 Diagnosing Canada's Competitive Advantages 67

PART II DIFFERENTIATED NATIONAL STRATEGY

Chapter 6 A Portfolio Strategy for Canada 91
Chapter 7 A Strategy for the Commodity Sector 96
Chapter 8 A Strategy for the Sunset Sector 103
Chapter 9 A Strategy for the High Technology Sector 108
Chapter 10 A Strategy for the Capital-Intensive Sector 116
Chapter 11 A Strategy for the Labour-Intensive Sector 120
Chapter 12 A Strategy for the Transport Equipment Sector 124
Chapter 13 A Strategy for the Energy Sector 129

PART III THE MACRO-ECONOMIC ENVIRONMENT

Chapter 14 Canada's Position in the US Market 135
Chapter 15 The Fiscal and Monetary Climate 145

Technical Appendix 147
Bibliography 153
The Members of the Institute 158
Institute Management 159
Publications Available 160

FOREWORD

With the thrust of technological development and the pressures of an increasingly competitive international environment, the structure of the Canadian economy is changing. New economic issues include the emergence of the service sector, the apparent growth of the informal economy, and the adjustment of resource sectors to an anticipated period of secular decline in real prices following the commodity boom of the 1970s. Each issue raises important questions about the forthcoming transitions of the Canadian economy and the policies governments might adopt to facilitate the necessary adjustments while maintaining our traditional bases of economic strength.

Historically, Canada's manufacturing sector has played a significant role in this country's economic development. Its pivotal position in the present economic structure of the nation is well recognized. The competitive strategies followed by firms in this sector are thus of vital concern to our overall economic health. These strategies arose in part in response to the opportunities that firms perceived in the national and international environments in which they operated. During recent years, in adverse economic conditions, some crucial weaknesses in the competitive position of Canadian manufacturing enterprises have become apparent and are causes for serious concern. The combination of weak demand on both the national and international fronts with the emergence of vigorous new competitors in Japan, in the expanding economies of East Asia, and in third world nations eager to follow export-based growth strategies, has exposed the inadequacy of strategies that once served well. The gap between the strategic practices of Canadian manufacturing and the competitive imperatives of the marketplace has grown wide.

Recognizing that it is necessary to reassess their competitive posture, some manufacturing firms in Canada have undertaken probing examinations of their strategies — a process that has come to be called a "strategic audit." It is equally necessary for governments to examine their policies for manufacturing industries as well as for service activities and resource sectors. Although they may have only indirect influence on the specific strategies adopted by individual enterprises, governments shape the fiscal, monetary and industrial context in which manufacturers operate and thus influence the chances of success or failure of individual firms. A thorough examination of this role of government is vitally necessary to ensure that Canadian manufacturing can continue to play its traditionally pivotal role in the economic structure of the nation.

This study examines the Canadian government's policies towards the manufacturing sector from a strategic perspective and develops a framework for assessing the adequacy of present policies in light of the current and anticipated international competitive environment. Further, by measuring the performance of Canadian manufacturing over the past two decades, this work sheds light on the decline in competitive capacity.

The study also provides a framework for formulating and assessing alternative prescriptions for a national strategy for the manufacturing sector. In this respect, it departs from a number of previous studies conducted under the rubric of "industrial strategy." Most of the latter have advocated some form of direct government intervention in shaping strategic choices. They tend to favour a strong government hand in picking winners and supporting them. This study starts with the assumption that the choice of individual strategies for businesses and the allocation of resources to implement these strategies is not the function of government. It maintains that governments are not equipped or structured to make such choices in an economically efficient manner. Therefore, a national strategy as outlined here is not an industrial strategy in the way that term is usually understood by its proponents. Rather, it concerns the more fundamental choice of the goals of economic policy and the manner in which such policy is to be administered. It is concerned with the economic context within which firms can make strategic choices, not with a case-by-case involvement in the choices themselves.

There is much in this approach and in the detailed discussions in the pages that follow with which the reader may disagree. Indeed, some members of the Institute disagree with a great deal of what this study advocates. They would insist on the necessity of addressing issues of social organization and income distribution along with, not after, considerations of economic efficiency and competitive position. They would not accept, therefore, the proposed separation of wealth creation from distribution. Nevertheless, we find the approach and the arguments laid out in this study interesting and provocative. We hope that this study will stimulate further work. In particular, much greater emphasis on the emergence of the service sector and on the contribution of service activities (including public services) to wealth creation and export performance is needed.

As the reader interested in Canadian public policy will readily recognize, debate on all these questions is vitally needed at this time. If the

current government is to rise to the daunting challenge of widespread unemployment in an era of slow growth, it must conduct a searching examination of all facets of its industrial policies. This study provides a framework for part of this debate. Although we are under no illusions that it will provide all the answers, we are confident that it will help by focussing attention on the right questions and on some relevant data.

Rod Dobell
President

March 1985

AVANT-PROPOS

Sous la poussée du développement technologique et de l'intensification de la concurrence internationale, la structure de l'économie canadienne est en train de se transformer. Il se présente une nouvelle situation économique : l'émergence du secteur des services, la croissance évidente de l'économie souterraine et l'adaptation du secteur des richesses naturelles à la période de déclin séculaire des prix réels prévue après le boom des années 1970. Chacun de ces points soulève des questions importantes touchant les transitions qui s'annoncent pour l'économie canadienne ainsi que les politiques que l'État pourrait appliquer afin de faciliter l'adaptation nécessaire et préserver les bases traditionnelles de notre puissance économique.

Les industries de fabrication canadiennes ont joué historiquement un rôle important dans le développement économique de notre pays, et il est largement admis qu'elles occupent une position centrale dans la structure économique actuelle. Les stratégies concurrentielles qu'appliquent les entreprises de ce secteur sont donc d'un intérêt vital pour la santé globale de notre économie. Les entreprises de fabrication ont en partie conçu ces stratégies en réponse aux possibilités qu'elles discernaient dans l'environnement national et international où elles oeuvrent. Dans le contexte économique défavorable de ces dernières années, certaines faiblesses cruciales se sont révélées dans la compétitivité des entreprises canadiennes de fabrication, faiblesses qui suscitent de graves inquiétudes. L'effet conjugué d'une demande faible sur les marchés nationaux et internationaux et de l'émergence de nouveaux concurrents pleins de vigueur — au Japon, dans les économies en expansion de l'Asie de l'Est et dans les pays du Tiers-Monde pressés d'appliquer des stratégies de croissance fondées sur l'exportation — a révélé l'insuffisance de stratégies qui nous avaient naguère bien servis. Bref, l'écart est devenu considérable entre les pratiques stratégiques du secteur canadien de la fabrication et les impératifs de la concurrence.

Conscientes de la nécessité de réévaluer leur position dans la concurrence, certaines entreprises canadiennes de fabrication ont entrepris un rigoureux examen de leurs stratégies — une "révision stratégique", comme on désigne maintenant ce processus. Il est tout aussi nécessaire que l'État, à tous ses niveaux, examine ses politiques touchant les industries de fabrication ainsi que le secteur des services et celui des richesses naturelles. S'il peut n'avoir qu'une influence indirecte sur les stratégies adoptées par les entreprises considérées une à une, l'État façonne le cadre fiscal, monétaire et industriel dans lequel oeuvrent les fabricants et, à ce titre, influe sur leurs chances de succès. Il est absolument essentiel d'examiner en profondeur ce rôle de l'État si l'on tient à ce que le secteur de la fabrication continue de remplir la fonction traditionnellement centrale qui est la sienne dans la structure économique de notre pays.

Les auteurs de cette étude examinent d'un point de vue stratégique les politiques de l'État canadien touchant le secteur de la fabrication et proposent un schéma d'évaluation des politiques actuelles en fonction de la concurrence internationale telle qu'elle est et telle qu'on la prévoit. Ils font aussi ressortir le déclin de la compétitivité de notre secteur de la fabrication en mesurant ses performances des deux dernières décennies.

Cette étude propose aussi un appareil théorique permettant de formuler et d'évaluer d'autres orientations possibles pour une stratégie nationale du secteur de la fabrication. À cet égard elle diffère d'un grand nombre de travaux antérieurs publiés sous la rubrique de la "stratégie industrielle". La plupart, en effet, préconisent sous une forme ou sous une autre l'intervention directe de l'État dans les décisions stratégiques et l'on a tendance à inviter le gouvernement à faire sentir fortement sa présence en choisissant les gagnants et en les appuyant. Cette étude repose au contraire sur l'hypothèse voulant que l'État n'a pas à choisir de stratégies particulières au nom des entreprises ni à engager les ressources nécessaires à leur application. On y soutient que l'État, à quelque niveau que ce soit, n'a ni les instruments ni la structure nécessaires pour prendre ces décisions de manière économiquement efficiente. Par conséquent, la stratégie nationale ici ébauchée n'est pas une stratégie industrielle au sens où ses tenants l'entendent habituellement. Elle concerne plutôt le choix plus fondamental des buts de la politique économique et la manière dont cette politique doit être appliquée; elle touche en somme le contexte économique dans lequel les entreprises pourront faire des choix stratégiques plutôt que les choix eux-mêmes dans chaque cas particulier.

Il y a beaucoup de choses dans cette conception et dans les analyses détaillées des pages qui suivent avec lesquelles le lecteur pourra se trouver en désaccord. En fait, certains membres de l'Institut sont en désaccord avec une grande partie des thèses soutenues dans cette étude. Ils feraient ressortir la nécessité de s'attaquer aux problèmes d'organisation sociale et de distribution des revenus en même temps qu'aux questions d'efficience économique et de compétitivité, et non après. Ils n'accepteraient donc pas que l'on dissocie la création projetée de la richesse de sa distribution. Nous trouvons néanmoins

l'approche et les arguments développés dans cette étude aussi intéressants que stimulants. Nous espérons que cette étude servira de point de départ à d'autres travaux. En particulier, il conviendrait d'accorder plus d'attention à l'émergence du secteur des services ainsi qu'à la contribution de celui-ci (notamment des services publics) à la création de la richesse et à la performance des exportations.

Comme le reconnaîtra facilement le lecteur qui s'intéresse à l'orientation politique de notre pays, le besoin d'un débat sur l'ensemble de ces questions se fait actuellement ressentir. Si le gouvernement présent veut se montrer à la hauteur du formidable défi que représente le chômage massif à une époque de croissance au ralenti, il doit examiner rigoureusement tous les aspects de ses politiques industrielles. Cette étude fournit un cadre à une partie de ce débat. Si nous n'entretenons pas l'illusion qu'elle offrira toutes les réponses, nous sommes persuadés qu'elle sera d'un grand secours en concentrant l'attention sur les questions et les données pertinentes.

Le président,
Rod Dobell

Mars 1985

THE AUTHORS

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This study was inspired by the pioneering work of Bruce R. Scott of the Harvard Business School on US competitiveness in the world economy. Scott not only gave generously of his time to the authors as they formulated a similar study of Canadian competitiveness, but also made them aware of the rich potential of the French government data base, which was used for an analysis of changes in the competitive position of Canadian manufacturing.

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We are grateful to our advisory committee of senior businessmen who assisted us by bringing their knowledge and judgment to bear in sharpening the analysis of the strategic problems of Canadian manufacturing. This committee consisted of: Lou Hollander of Reichhold Ltd; Tom Kierans of McLeod Young Weir Ltd; Ralph Sultan of Starlaw Holdings Ltd; and Red Wilson of Redpath Industries Ltd. Academic advisors to the study were Carl Beigie, G. David Quirin and George S. Day of the University of Toronto, Don Daly of York University, and Donald McCharles of the University of New Brunswick. Wendy Dobson and Richard Lipsey of the C.D. Howe Institute, and Jason Stewart provided helpful suggestions after reading early drafts.

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SUMMARY

This study examines the impact of Canada's national economic strategy on the international competitiveness of its manufacturing sector. A national economic strategy has to do with the economic goals of public policy, the principal policies that a nation adopts to achieve these goals, and the framework of institutions and processes that are used to allocate economic resources. Every nation has an economic strategy. In some cases, it may be explicit, highly focussed and well-integrated. At the other extreme, economic strategy can be largely implicit, internally inconsistent, and executed through policies that work at cross purposes. One key difference in various national strategies is not whether they are coherent, but rather the extent to which they are orientated towards growth/development as opposed to income redistribution. Another key difference is whether the favoured policy approach involves direct, "hands-on" government decision-making or "hands-off," market-driven resource allocation.

National economic strategies have a profound influence on the competitive international environment, particularly when the pace of international economic growth is slow. The 1970s witnessed several fundamental changes in international competition. Japan and a number of countries influenced by Japanese economic policies have adopted strategies to increase their share of international trade; in many industries, they have elbowed developed countries out of their accustomed prominence. Third world nations have eagerly pursued strategies to increase their exports of labour-intensive goods. The quickening pace of technological diffusion has destabilized the traditional patterns of national comparative advantage. Meanwhile, the progressive lowering of tariff barriers has opened many previously protected national markets to international competition.

One of this study's principal findings is that the structure of Canada's manufacturing sector has not changed sufficiently to cope with this new environment. While world markets and the relative competitive positions of many other countries have undergone profound changes, Canada continues to rely on a manufacturing structure that may have been appropriate in the 1960s but that is unable to cope effectively with the competitive problems of the 1980s and beyond.

The main cause of this rigidity in Canada's manufacturing sector has been the national economic strategy pursued over the last two decades. The goals of economic policy have been mainly redistributional, and there has been insufficient emphasis on growth and development. This political climate has been coupled with a preference for policies of "hands-on" decision-making by government in specific economic projects, to the detriment of market-based processes of industrial transition towards a knowledge-orientated manufacturing structure. This study contends that the combination of socially directed goals and resource allocation by government fiat has weakened Canada's ability to transform its manufacturing structure to meet the new competitive challenges.

Top-Down Diagnosis

Two sets of "top-down" diagnoses support this point of view. The manufacturing sector is analyzed as a portfolio of 71 industries. Changes in this portfolio between 1967 and 1981 are compared to similar changes in Japan, the United States, Britain and France.

One set of analyses is based on the concept of Export Revealed Comparative Advantage (ERCA). This uses the ratio of Canada's share of world trade in a particular industry to the country's share of world trade in goods. It provides an objective measure of how well a particular industry in Canada has fared and is faring, compared with all other Canadian industries. Patterns of change in ERCAs for various industries give us some insight into the total structure of the manufacturing portfolio. The analysis shows how little this structure has changed, relative to the rate of growth in international trade in various industries and relative to the technological intensity of each industry.

The second set of top-down analyses uses the concept of Relative Market Share. This is the ratio of Canada's share of world trade in an industry to the combined share of the three largest exporting countries with which Canada competes in world markets. Changes in Relative Market Share reflect shifts in competitiveness and are useful for diagnosing the strategic health of Canada's industrial portfolio.

Finally, the study briefly examines evidence from the work of other researchers, who have documented the overall decline in Canadian industrial competitiveness in unit labour costs, compared with the principal competitors Canada faces in key international markets. These findings corroborate the major conclusions of the top-down analysis, providing one set of persuasive explanations for the decline in Canada's competitive position.

Bottom-Up Strategy Prescriptions

This study recommends a comprehensive change in Canada's industrial strategy. The fundamental thrust of these recommendations is that Canada should make a firm distinction between social policy and economic policy. The latter should be directed mainly towards growth/development and should be pursued largely through market-driven, "hands-off" resource allocation processes. Economic policy should be directed towards *baking more pie*, not towards how the pie is to be divided among the country's regions and income groups. Redistribution of wealth, to the extent that it is politically desirable, should be the domain of social policy, which should remain separate from economic policy.

The detailed strategies for implementing these economic goals are developed by *bottom-up* analysis. The industries that make up Canada's industrial portfolio are grouped into strategic clusters. Each cluster consists of industries that share common strategic characteristics. The analysis identifies the major strategic issues that firms in those industries face in maintaining their competitiveness. Next, a series of changes in government policies is recommended. These changes are designed to allow the respective firms to deal more effectively with the threats and opportunities they face in the international marketplace. Finally, we describe measures for implementing these changes in policy.

The industrial portfolio is addressed in terms of the strategic circumstances of six manufacturing sectors — Mature Commodities, Sunset, High Technology, Capital-Intensive, Labour-Intensive and Transport Equipment. The Energy Sector is discussed separately. An eighth sector — Renewable Resources — is not discussed. Since the strategic recommendations for each sector are tailored to suit its particular circumstances, the overall strategy recommended for the portfolio is differentiated. However, the central themes that unite these strategies are economic growth and development and a preference for market-based approaches to resource allocation.

US Trade Relations and Macro-Economic Policies

Since Canada's export trade depends so heavily on the US market, a separate chapter discusses the performance of each strategic sector in that market. Several disturbing trends of declining performance are highlighted. The importance of maintaining open access to the US market for Canadian industries can hardly be overstated.

Finally, while the focus of this study has been at the industrial level, macro-economic policies are very important too. The last chapter sketches the macro-economic policy environment that will be vital for achieving the economic goals of the proposed strategy. It emphasizes the need for reducing the federal deficit, maintaining restraint in public sector wages, and keeping the exchange rate of the Canadian dollar close to its current level.

ABRÉGÉ

Cette étude a pour objet l'impact de la stratégie économique nationale du Canada sur la compétitivité internationale de ses industries de fabrication. La stratégie économique nationale regroupe les objectifs économiques de la politique de l'État, les principales politiques que celui-ci adopte pour atteindre ces objectifs ainsi que l'affectation des ressources économiques par un ensemble d'organismes et de mécanismes. Tous les pays ont une stratégie économique. Dans certains cas, elle est explicite, orientée avec précision et bien intégrée. A l'opposé, la stratégie économique peut être en grande partie implicite, manquer de rigueur interne et se traduire par des mesures contradictoires. L'un des principaux critères distinguant les stratégies nationales les unes des autres n'est pas tant leur cohérence relative que la mesure dans laquelle elles sont axées sur la croissance et le développement par opposition à la distribution du revenu. Un autre critère de différenciation important est la question de savoir si le processus de décision se fonde sur la participation active des pouvoirs publics ou repose au contraire sur la dynamique indépendante du marché.

La stratégie économique nationale exerce une profonde influence sur l'environnement de la concurrence internationale, surtout lorsque le rythme de la croissance économique internationale est lent. Durant les années 1970, la concurrence internationale a subi plusieurs changements fondamentaux. Le Japon et un certain nombre de pays influencés par ses politiques économiques ont adopté des stratégies visant à accroître leur part du commerce international; ces pays ont, dans de nombreux secteurs, ravi aux pays développés leur prééminence traditionnelle. Les pays du Tiers-Monde ont appliqué vigoureusement des stratégies propres à accroître leurs exportations de produits travaillistiques. L'accélération de la diffusion des techniques a mis fin à l'équilibre traditionnel des avantages comparatifs nationaux. Entre-temps l'abaissement progressif des barrières tarifaires a ouvert à la concurrence internationale un grand nombre de marchés nationaux auparavant protégés.

L'une des principales conclusions de cette étude est que la structure du secteur canadien de la fabrication n'a pas changé suffisamment pour lui permettre de s'adapter à ce nouvel environnement. Alors que les marchés mondiaux et la position concurrentielle de nombreux autres pays ont subi de profonds changements, le Canada continue à compter sur une structure manufacturière qui était peut-être valable dans les années 1960, mais qui ne saurait s'adapter comme il convient aux problèmes que pose la concurrence dans les années 1980 et qu'elle posera plus tard.

La cause principale de cette rigidité du secteur canadien de la fabrication est la stratégie économique nationale appliquée durant les deux dernières décennies. Les objectifs de la politique économique ont été surtout axés sur la redistribution, et l'on n'a pas assez insisté sur la croissance et le développement. A ce climat politique s'ajoutait une préférence pour l'intervention de l'État dans certains projets économiques, au détriment de processus identifiés au marché libre et favorisant la transition industrielle vers une structure manufacturière axée sur la matière grise. Cette étude veut montrer que la prédominance des objectifs sociaux et l'affectation des ressources dictée par l'État ont affaibli la capacité du Canada de transformer sa structure manufacturière en fonction des nouvelles exigences de la concurrence.

L'analyse descendante

Deux ensembles de diagnostics "descendants" étayent ce point de vue. Le secteur de la fabrication est analysé comme un portefeuille de 71 branches d'activité. Les changements qu'a subis ce portefeuille de 1967 à 1981 sont comparés aux changements équivalents qu'ont connus le Japon, les États-Unis, la Grande-Bretagne et la France.

Le premier ensemble analytique est fondé sur le concept d'avantage comparatif révélé par les exportations. Il s'agit ici d'établir le rapport entre la part canadienne du commerce mondial dans une branche donnée et la part du Canada dans le commerce mondial des biens. Ce ratio permet de mesurer objectivement les performances passées et présentes d'une branche d'activité donnée au Canada par rapport à toutes les autres industries du pays. La structure du changement de l'avantage comparatif révélé par les exportations dans diverses branches jette une certaine lumière sur la structure globale du portefeuille manufacturier. L'analyse montre combien cette structure a peu changé par rapport au taux de croissance du commerce international dans diverses industries et par rapport à l'importance de la composante technologique de chacune.

Le deuxième ensemble analytique repose sur le concept de part relative du marché. La part relative du marché est le rapport entre la part canadienne du commerce mondial dans une branche donnée et la part globale des trois principaux concurrents du Canada sur les marchés mondiaux. L'évolution de la part relative du marché reflète les varia-

tions de la compétitivité et s'avère utile pour le diagnostic des maladies stratégiques du portefeuille industriel canadien.

Enfin, les auteurs examinent brièvement les résultats des travaux d'autres chercheurs qui ont documenté la thèse du recul global de la compétitivité industrielle canadienne sous le rapport des coûts unitaires de main-d'oeuvre devant les principaux concurrents que notre pays doit affronter sur les marchés internationaux les plus importants. Ces résultats confirment les principales conclusions de l'analyse descendante et apportent un ensemble d'explications convaincantes du recul du Canada dans la concurrence internationale.

Analyse ascendante et propositions stratégiques

Les auteurs recommandent une transformation complète de la stratégie industrielle du Canada. L'axe fondamental de leurs propositions veut que le Canada établisse une distinction nette entre la politique sociale et la politique économique. Celle-ci doit s'orienter avant tout vers la croissance et le développement et elle doit dans une large mesure exclure l'intervention de l'État et laisser l'affectation des ressources à la dynamique du marché. En somme, il faudrait que la politique économique vise à *faire un plus gros gâteau* plutôt qu'à déterminer le partage du gâteau entre les régions du pays et les classes de revenu. La redistribution de la richesse, dans la mesure où elle est politiquement souhaitable, devrait être le fait de la politique sociale, qui doit rester distincte de la politique économique.

La stratégie détaillée permettant d'atteindre ces objectifs économiques est élaborée au moyen d'une analyse ascendante. Les branches d'activité qui constituent le portefeuille industriel du Canada sont classées en groupes stratégiques. Chaque groupe rassemble les branches à caractères stratégiques communs. Les analystes repèrent d'abord les grands problèmes stratégiques que les entreprises de ces branches doivent affronter pour conserver leur compétitivité. Ils proposent ensuite une série de changements à apporter aux politiques de l'État. Ces changements sont conçus pour permettre aux entreprises en cause de réagir plus efficacement aux dangers, et de mieux profiter des possibilités du marché international. Les auteurs énoncent enfin une série de mesures à prendre pour concrétiser ces changements de politique.

Le portefeuille industriel est analysé en fonction des conditions stratégiques de six secteurs de fabrication : ce sont les secteurs parvenu à maturité, en déclin, de pointe, capitalistique, travaillistique et du matériel de transport. Le secteur de l'énergie est examiné séparément. Un huitième secteur — celui des ressources renouvelables — n'entre pas dans le cadre de l'analyse. La stratégie d'ensemble recommandée pour le portefeuille est différenciée, étant donné que les propositions s'appliquant à chaque secteur sont conçues en fonction des conditions qui lui sont propres. Ces éléments se regroupent cependant autour de thèmes centraux : la croissance et le développement économiques, et la préférence accordée à l'affectation des ressources en fonction de la dynamique du marché.

Les relations commerciales avec les États-Unis et les politiques macro-économiques

Etant donné que le commerce d'exportation canadien dépend dans une si large mesure du marché américain, les performances de chaque secteur stratégique sur ce marché font l'objet d'un chapitre distinct. Les auteurs relèvent à cet égard plusieurs tendances inquiétantes, annonciatrices de déclin. On pourrait difficilement surestimer l'importance pour les industries canadiennes de maintenir leur accès au marché américain.

Si cette étude est avant tout axée sur l'industrie, les politiques macro-économiques sont très importantes elles aussi. Le dernier chapitre esquisse la politique macro-économique qu'il sera essentiel d'appliquer pour réaliser les objectifs économiques de la stratégie proposée. Les auteurs y insistent sur la nécessité de réduire le déficit fédéral, de continuer à contrôler les salaires du secteur public et de maintenir le dollar canadien près de son niveau actuel sur le marché des changes.

INTRODUCTION

The primary audience for this study of the competitiveness of Canadian manufacturing are national policy-makers and those interested in the development of a set of national policies that will strengthen the competitive capacity of Canada's manufacturing sector. The book's objectives are twofold. First, it aims to provide a diagnosis of the competitive position of Canadian manufacturing. It examines the changes in the structure of comparative advantage of Canadian industries relative to Canada's competitors in the international marketplace and the changes in the competitive position of these same industries. The main purpose of this diagnosis is to provide objective evidence of the problems in the Canadian manufacturing sector and to demonstrate the deteriorating economic performance that has taken place over the last two decades.

Although this analysis addresses the competitive problems of Canada as a nation, clearly it is Canadian companies that do the competing, that battle for sales in the international marketplace. It is *their* failure or success that will determine future developments. But government policy plays a major role in establishing the competitive environment in which these firms operate. It is to this environment that the second objective of this study is addressed. It provides a prescription for an integrated set of policies, again from the perspective of national policy-makers and those who advise them.

As a nation heavily dependent on international trade, Canada has to be especially concerned about strategic developments in the international marketplace. If its export industries falter, its domestic economic structure is similarly placed in jeopardy. If Canadian exports fail to earn their place in the international marketplace, the country's present standard of living cannot be sustained. International competitiveness is of supreme importance to the long-run welfare of Canadians. It is therefore necessary for policy-makers to adopt a strategy that will make Canada's manufacturing industries more competitive.

National Strategy Framework

The first three chapters develop the concept of a national strategy and apply it to the Canadian situation. It is essential here to distinguish between a "national strategy" and a "national plan." National planning is mainly a socialist approach to political economy. It is exemplified by the five-year plans that are common in the Eastern Bloc countries, which have chosen to replace the capitalist market system of resource allocation with a bureaucratic system of setting economic goals and allocating production resources. Some major capitalist countries — Japan and France, for instance — also practice national planning. The Japanese have developed a unique version of national planning, which places great emphasis on export market factors, but they appear to be moving away from the planning model that they adopted in the immediate post-war years.

National strategy refers to a nation's central political-economic objectives and the means chosen to achieve them. It reflects the trade-offs a nation makes between wealth creation and wealth redistribution. It further reflects the extent to which national energies are directed towards economic growth as opposed to wealth redistribution. National strategy is also concerned with means to these ends. Here the fundamental trade-off is between centralization and decentralization. At one extreme, a national strategy may require a heavily centralized system of decision-making, as in a dictatorship. At the other extreme, a country may favour a pluralistic decision apparatus, with multiple locii of power.

Chapter 1 provides a framework for understanding national strategy and applies this framework to a number of major countries. Chapter 2 applies the same framework to Canada. It examines the changes that have taken place in Canada's national strategy over the last twenty years. This section of the book concludes with a framework for analyzing Canada's economic performance under this strategy.

Top-Down Diagnosis

The study then proceeds to a top-down diagnosis of the performance of Canadian manufacturing industries between 1967 and 1981. These fifteen years are divided into three periods — 1967-71, 1971-76 and 1976-81 — each one ending in a year in which the business cycle was on a relatively even keel. The various manufacturing industries are treated as a strategic portfolio, much in the way that a large, multi-business corporation is said to consist of a portfolio of strategic business units. Two chapters describe the principal trends in the structure of the Canadian

industrial portfolio. The first depicts the changes in the comparative advantage of Canadian industries; each industry in Canada is compared with the overall performance of the Canadian portfolio. The second describes changes in the competitive position of these industries in the international marketplace, comparing the performance of each Canadian industry with that of the principal countries that compete in that same industry.

The major finding of the top-down analysis is that little significant change occurred in the structure of the portfolio between 1967 and 1981. The strategic portfolio was well suited to the competitive environment of the 1967-71 period, which was characterized by rapid growth in international trade in the major export commodities on which Canada depends. However, the portfolio is poorly suited to the current competitive environment, where trade growth in major export commodities is stagnant or declining. The emphasis has shifted to high-technology, knowledge-intensive industries, in which Canada has a poor competitive position.

To place the performance of the Canadian portfolio in perspective, many comparisons are made with the portfolios of other developed countries — the United States, countries in Western Europe and Japan. The flexibility of the Japanese economy in adjusting its portfolio to changes in the international competitive environment contrasts sharply with the Canadian system's rigidity.

Bottom-Up Prescriptions

While top-down analysis provides useful insights into the past, it alone cannot serve as the basis for prescribing change. The next eight chapters develop a set of prescriptions based on bottom-up analysis. Industries are first assigned to strategic clusters. Each cluster consists of a group of industries that share key strategic characteristics. Eight clusters are identified — six for manufacturing, one for energy products, and one for renewable resources.

Within each cluster, the major strategic issues that underlie competitiveness in the individual firm are identified. This analysis is based on the authors' experience in strategy formulation at the firm level and is supported by industry-level strategic analysis. The study then maps out the main features of the public policy environment that can contribute towards an effective strategy formulation. What is emphasized here is how to create the proper environment for effective strategy formulation, not the strategy itself.

The final section of each chapter looks at ways of implementing public policy. It describes the practical aspects of national policy, identifying the principal courses of action that are necessary to put the recommended environmental conditions in place. No recommendations are made for the renewable resource industries, where a different set of policy considerations apply.

Taken together, the recommended policies represent a national industrial strategy for Canadian manufacturing. This strategy emphasizes economic growth and development, with government playing a "hands-off" role. It is agreed that the fundamental responsibility for wealth creation in a market economy has to lie with the private sector. The government's role in micro-economic policy should be limited to establishing the rules of the game and providing public support. Direct intervention in economic affairs leads to suboptimal economic performance.

This belief in no way conflicts with the view that fairness in income distribution is a legitimate objective of civilized societies. Indeed, it is here that government has a role to play by operating social programs to provide a safety net for citizens and by ensuring that social justice prevails. As we shall argue, the key to this approach is to make a firm distinction between economic policy and matters of social welfare. The former should be carried out by the private sector, while the latter, we believe, are government's domain.

Macro-Economic Environment

The main thrust of the recommended economic policy is micro-economic — focussing on the individual firm and industry. However, an appropriate macro-economic environment is equally vital for economic development. The final two chapters of the book briefly examine this environment. One describes Canada's position in the United States market, which is of critical importance to this country's economic welfare. The other outlines a series of monetary and fiscal policies that would be most conducive to the successful implementation of the micro-strategies that are advocated.

Part I
NATIONAL STRATEGY AND TOP-DOWN DIAGNOSIS

Chapter 1
A NATIONAL STRATEGY FRAMEWORK

When we set out to study the competitiveness of Canadian manufacturing in the context of the international marketplace, we were aware of the considerable debate that has taken place about an "industrial strategy" for Canada. As our work progressed, we became convinced that to formulate a successful industrial strategy would require us to apply concepts and approaches developed for the private sector but suitably modified to meet the needs of the public sector.

Public sector responsibility covers issues that go far beyond industrial policy. Such concerns as social welfare, defence and public order are often more important to decision-makers in the public sector than purely economic objectives. Since one cannot examine industrial strategy in isolation from these other considerations, its formulation must be placed in a sufficiently broad framework to take account of them. We call this a National Strategy Framework. Professor Bruce Scott of the Harvard Business School has done a great deal to clarify the concept of a national strategy. Our work uses this concept as a starting-point. According to Scott (1984:2):

> Like a corporate strategy, a national strategy consists of goals, a concept of how to achieve these goals in a competitive environment, and a set of policies and institutions to implement the concept.

We can develop a holistic picture of a nation's strategy by examining its performance and its socio-economic context. This provides a framework within which to place the country's economic policies and industrial structure. Industrial strategy can then be viewed as dependent upon and flowing from national strategy.

Economic Goals

It must be stressed at the outset that a nation's fundamental economic goals are not brought about by economic analysis. They are expressions of political will and are developed through a *political* process. Such goals reflect the concerns — whether imposed or democratically derived —

that the nation's decision-makers currently hold about what that nation is and what they want it to become.

Economic analysis can play a useful role in the formulation and modification of these goals, by showing what is likely to occur when the nation adopts a particular set of objectives in a given economic environment. Furthermore, economic thought can contribute to the development of strategies for achieving a particular configuration of goals; they can show what is likely to work and what will probably fail. Finally, economics can provide a framework for resource allocation among competing goals and interests.

Economics thus has a central role in the formulation and accomplishment of national purpose, but that role stops short of the formulation of particular goals. That is properly the domain of the nation's political will. Therefore, the framework for discussing national economic goals must encompass both political thinking and economics. Nowhere is the term "political economy" more telling than when we discuss a nation's economic strategy.

The framework for our study is shown in Figure 1.1. On the horizontal axis, the dominant goal orientation of the nation is represented as a continuum between an overriding concern for equity and social justice on the extreme left, and a concern for economic growth and development on the extreme right. The former has come to be known as the "welfare state," by which governments have assumed responsibility for achieving a more uniform distribution of national income and wealth, for providing income security for its citizens, and for equalizing entitlements among various classes of citizens. In oversimplified terms, economic policy in societies at that end of the spectrum is primarily concerned with how the economic pie is to be apportioned

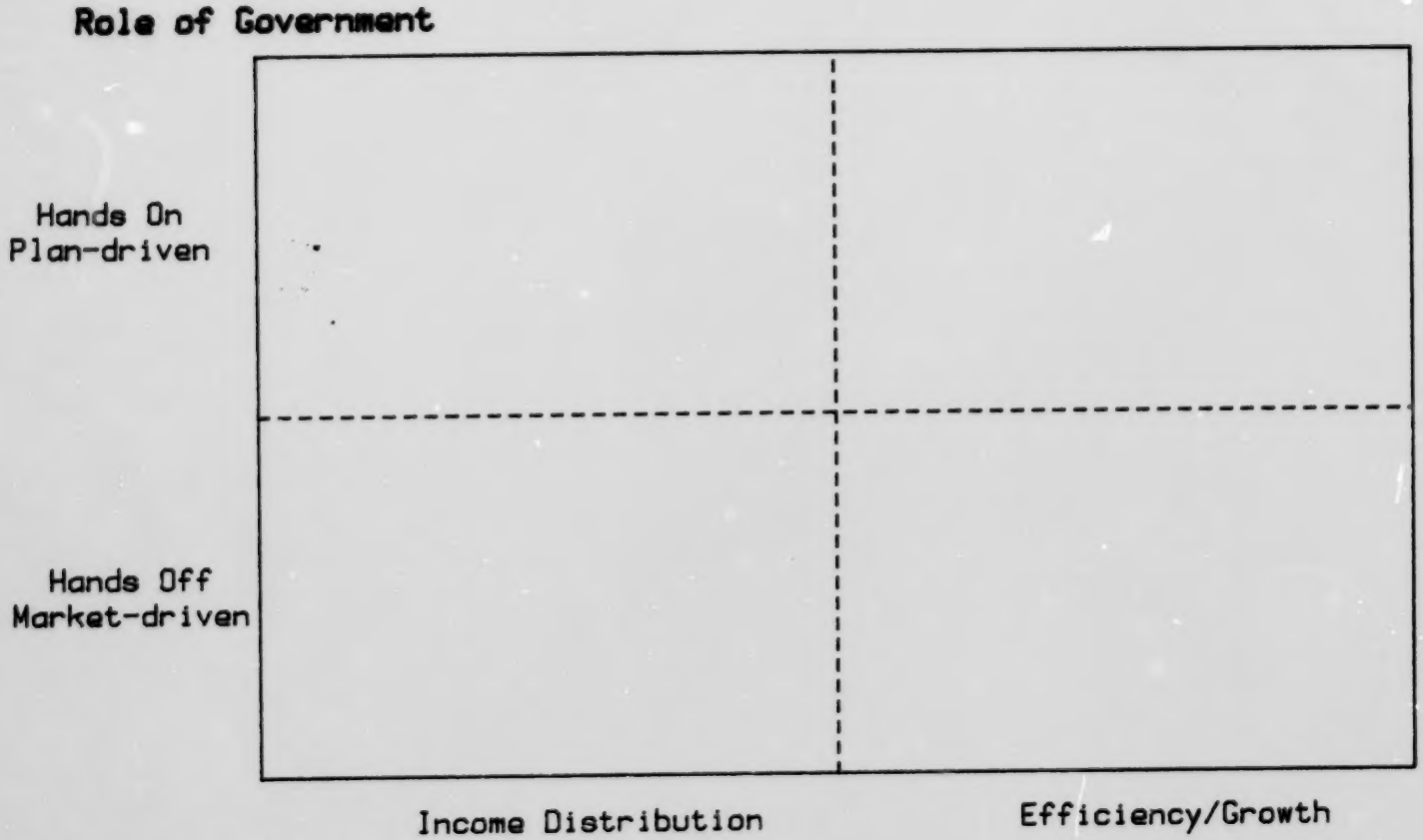
Conversely, economic policy in states at the right end of the spectrum is dominated by growth/development goals; it is primarily concerned with "baking more pie." The strategies of these states are driven by goals of economic growth; they are concerned with increasing their capacity to serve growing markets and with improving productivity. Resources are allocated to projects and industries that have the highest potential for economic return. Frequently, such strategies emphasize the importance of exports; if successful, they will lead to increased shares of the global product/markets in which these nations have chosen to compete.

The vertical axis displays the role of government in accomplishing national goals. This continuum distinguishes between the *plan-driven* or "hands-on" approach to political-economic strategy and the *market-driven* system, which we refer to as the "hands-off" approach. The key to this distinction lies in the way in which different states attempt to achieve their national goals. In the *plan-driven* state, the government intervenes directly and overtly in the economy. It may adopt formal planning processes, such as a five-year development plan, or it may intervene in economic affairs on a case-by-case basis. Max Weber characterized these forms of state intervention as *planwirtschaft*, whereby an official bureaucracy joins political leaders in implementing national strategy. *Plan-driven* states place a high priority on rules, regulations and due process and often develop elaborate bureaucratic rituals, whose coding and decoding require skills that take years to develop.

Market-driven states tend to rely on the premise that "the best government is the least government." The state sets the rules of the game and referees it; it provides basic services, which individuals, families, or firms are unable or unwilling to furnish in their own self-interest. The *market-driven* approach is both an economic theory and a political philosophy. In economics, the *market-driven* approach finds its justification in the idea of "allocative efficiency," in which the famous "invisible hand" of Adam Smith operates. Choices, based on self-interest, are made by individuals and atomistic firms. Collectively, these choices lead to the largest output from a given set of resources. As a political philosophy, the *market-driven* approach is based on the Locke-Jeffersonian espousal of the protection of individual rights and freedoms and a concomitant mistrust of big government and state intervention. The *market-driven* approach therefore seeks to curb the powers of the state to intervene directly in both economic and social matters. Where intervention is deemed necessary, it is treated with some suspicion. *Market-driven* states prefer to use general policy instruments, which apply across entire groups of individuals or firms or even across the entire economy, rather then the case-by-case decision-making favoured by *plan-driven* states. In *market-driven* systems, the course of the political economy is determined by hundreds and thousands of decisions by individuals, whereas *plan-driven* states employ a state-controlled planning apparatus.

1.1

National Strategy Matrix



Application of the Framework

To illustrate the use of the framework shown in Figure 1.1, let us place some nations into it. Figure 1.2 shows both the current position of Britain, Japan, the United States and Canada, and the directions in which they appear to have moved. The United States can be thought of as the quintessential *market-driven*, growth-orientated society. Because of its belief in the virtues of a free market system and its espousal of the sanctity of individual rights and freedoms, the United States has traditionally avoided centralized planning, except in war-time. Two major approaches to public policy have evolved in the United States. One, concerned with maintaining the competitiveness of the domestic market, found its expression in competitive, anti-trust policy. The second, based on the classical theory of comparative advantage, focussed on the international marketplace and espoused the concept of free trade as the basis for the international division of labour. These two approaches were mutually consistent and reinforced each other in a system of thinking that saw the US emerge as the dominant economic power of the post-war world. Government played only a modest role in this process, limiting its intervention to supervising the conduct of private firms.

During the last twenty-five years, however, US policy appears to have undergone significant changes. Both the Kennedy and Johnson administrations showed greater concern about equity and social justice than had been the case in the 1950s. Social welfare programs were expanded faster than the economy as a whole and now account for half the federal budget. Medicare and Medicaid have become enormous programs with huge budgets. Transfer payments of all kinds are on the rise, while spending for growth and development has been curtailed. Parallel to these spending shifts has been an explosion of laws and regulations intended to improve the lot of disadvantaged groups — blacks, Spanish-speaking persons and women in particular. While many of these programs meant that government had decided to participate in affairs it previously was not too concerned about, frequently they have been implemented in a manner that minimized the amount of discretion that government officials could exercise in individual cases. In other words, a "hands-off," *market-driven* philosophy prevailed even in this drive towards a society where income was redistributed more equitably.

The Reagan administration has departed emphatically from these trends. A wave of anti-interventionist reform is sweeping through American political life, a movement that began during the Ford and Carter administrations. It appears to have shifted the emphasis away from social goals and more towards defence spending and economic development. A program of deregulation has brought the United States closer to the *market-driven* system. One consequence of these changes appears to be a faster economic growth, and many cite this as evidence of the superiority of the "hands-off" approach. Others claim that such progress has been achieved "on the backs of the poor and the disadvantaged."

The Reagan administration's attitude to defence spending also marks a departure from previous policies. Reagan's preferences in the "guns vs. butter" question have pulled the United States to the right of its previous stance on social welfare. To some extent, the decision to increase the federal deficit has meant that the short-run choices between guns and butter have been sidestepped. But growth in social spending has been cut and defence expenditures increased. Rapid expansion in defence procurement has led to the growth and prosperity of American defence industries; this clearly represents a move to the right.

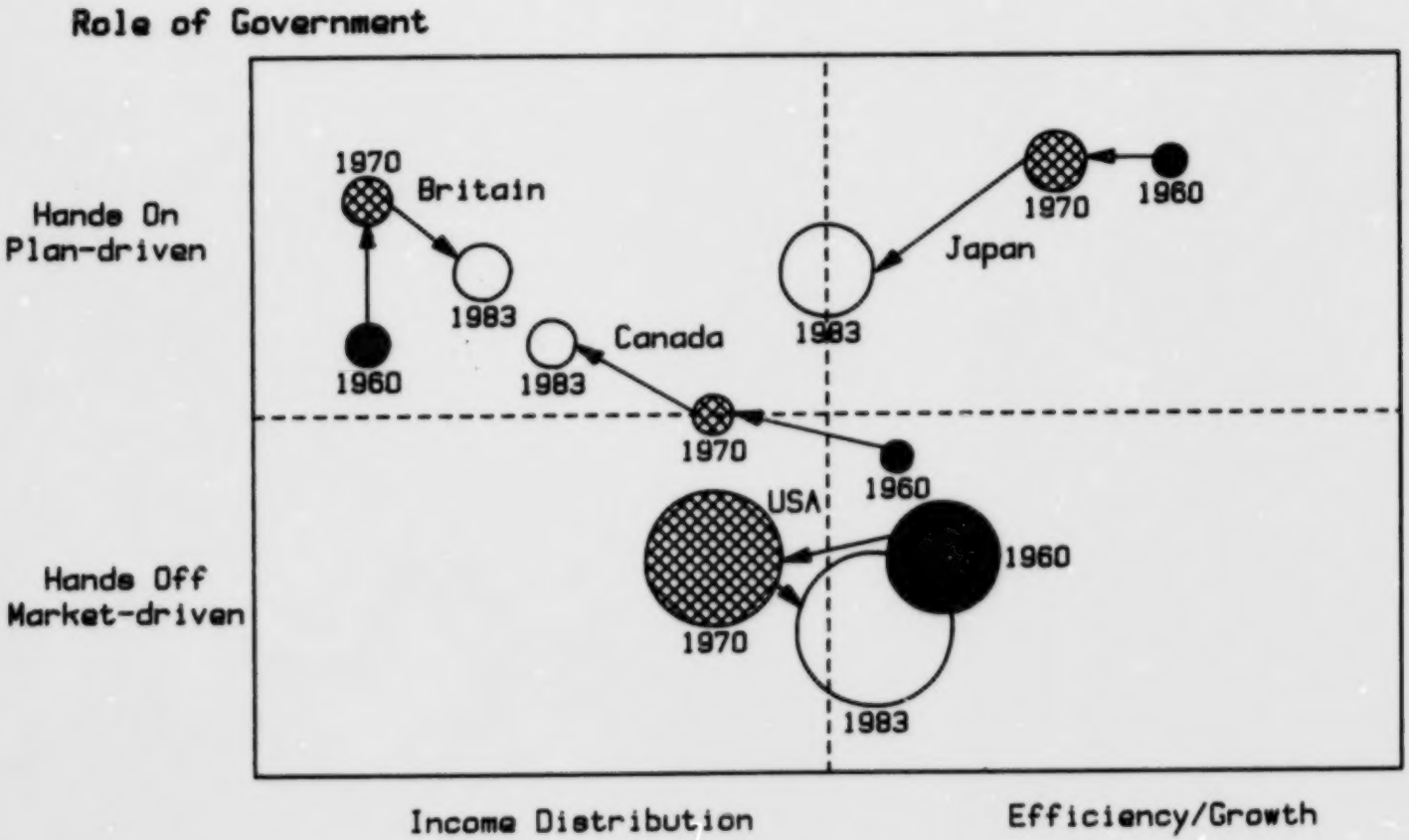
Defence expenditures are necessarily "hands-on" in the sense that the military set performance standards. However, the Reagan administration has chosen to increase the use of "hands-off," *market-driven* processes in military procurement. For example, there has been a shift away from cost-plus contracting towards fixed price (incentive) contracts, where the vendor shares the risk of cost overruns in exchange for an opportunity to earn higher profits by keeping down costs.

In Japan, social customs and institutional structures favour a much more "hands-on" role for government than in the United States. Modern Japan began to be *plan-driven* in 1868, according to Johnston (1982:23). The collaborative relationship between big business and government has been close, except for the 1900-35 period. Between 1935 and 1939, this took the form of policy coordination and close working ties between the *zaibatsu* (private industrial empires) and the central government. The post-war era saw the break-up of the formal *zaibatsu* by the Occupation administration, but the close-knit relationship between big business and the central government survived intact. Both sides accepted the role of the bureaucracy in formulating strategies to implement economic growth and development, and both respected the planner's primary role in making decisions about resource allocation. Furthermore, both sides agreed that the responsibility for implementing growth was almost exclusively the preserve of business firms, who were expected to compete vigorously with each other.

But Japan is beginning to change. Now that the country has clearly become a world leader, it is questioning the wisdom of a single-minded devotion to economic growth. It is challenging the feasibility of retaining its front-rank position in the rate of economic growth, and the desirability of pursuing headlong growth at the expense of the nation's social and ecological fabric. Indeed, Japan has already formally shifted away from its previous devotion to growth.

1.2

National Strategy Matrix for Selected Countries



1. Circle Size = Real GNP in 1983 $

As far back as 1976, Japan's national economic plan underlined these shifts of policy. A target growth rate was set at 6.25 per cent per year, a 36 per cent reduction from the previous plan's target. Perhaps more importantly, the new plan enunciated the importance of achieving an "affluent national livelihood" and "harmony with the international economic and social community." Japanese efforts to combat air pollution and toxic contamination have intensified; their standards for automobile emissions are tougher than those in the state of California. Of course, safeguarding the environment can be quite consistent with a policy of long-run economic efficiency, since environmental degradation can lower productivity and make it more difficult to attract highly skilled labour.

Japan has gone about this transition in a characteristically *plan-driven* manner, unlike the United States, which has adopted a much more *market-driven* approach. The response of MITI (Ministry of International Trade and Industry) to industrial pollution included the now infamous "Export Pollution" program, whereby key industries, such as steel, were provided administrative guidance and support in developing offshore locations (Brazil, South Africa and Australia) for the high-polluting stages of basic steel manufacture, while retaining subsequent low polluting, high "value-added" steps in Japan. The giant Tubarao development in Brazil is a case in point. A similar *plan-driven* philosophy is evident in government policies towards the highly inefficient, but labour-intensive, distribution system in Japan; this functions as a shock absorber for fluctuations in the pool of labour for large-scale industry. Protective government policy towards small-scale firms in the distribution trades is a deliberate consequence.

Japan's industrial policy has shifted away from its traditional "hands-on" approach. The role of government in case-by-case decision-making has largely been taken over by the private sector. MITI's power has been diminished considerably. Import quotas—once a principal tool for controlling the course of industrial development—have been practically eliminated. Increasingly, businesses are finding financial resources without the help of government. The technological competence of big business in Japan has improved to a point where they no longer require government assistance to acquire know-how from the West, which had been an important element in MITI's post-war mission.

As MITI's influence has waned, there has been a concomitant expansion in the role of other government departments. The Ministry of Finance, in particular, has become more influential in determining the country's economic policy. Policy-makers in the ministry seem to prefer a more "hands-off" approach than MITI. Their policies have been implemented through the commercial banking system to a greater extent than MITI's policies, which tended to rely heavily on large industrial firms to put its financial strategy into effect.

On the whole, it appears that Japan is moving down on the horizontal axis of the national strategy matrix. With the decline in MITI's influence, economic policy-making has taken on a more pluralistic character. The business community has become stronger and more independent and is now in a better position to resist MITI's efforts to maintain its "hands-on" control of the direction of economic development.

Britain is an example of a mature welfare state that has recently begun to concentrate on economic development objectives and a "hands-off" reliance on free market mechanisms. Precisely because Britain is experiencing changes in both dimensions simultaneously, the situation there is confusing. Certain policy changes, motivated by a renewed faith in the *market-driven* approach, are being condemned as a cynical betrayal of the hard-won social welfare achievements of previous socialist governments. Other changes, such as cutting government expenditures, are attempts to move towards a more development-orientated economy, but the opposition criticize them as evidence of the current Conservative government's distaste for state control. Yet the intended change of direction is quite clear. Present-day Britain is a good example of a developmental state that relies heavily on a similar *market-driven* approach to that which pertains in the United States.

Social and Economic Goals

In applying the framework, it is helpful to distinguish between social and economic policies. Since social policies are frequently intended to be distributional, they usually will be positioned in the left half of the matrix. Furthermore, it is rare indeed for governments to abandon a "hands-on" bias in its social policies because of the widely held belief that market mechanisms are not likely to achieve social equality. The very competitiveness that is the essence of the drive for efficiency will ensure that the have-nots will lose if resource allocation for social programs is *market-driven*. For this reason, national social policy will most often be found in the top left-hand quadrant of the matrix.

Economic policy is quite a separate issue. Not only is it likely to be positioned differently on the horizontal axis — to the left if economic policy is orientated towards income distribution, to the right when growth and development are its principal goals — but its position on the vertical axis will vary quite a lot.

When social and economic policy are positioned in the same quadrant, their combined effect is substantial. Such was the case in post-war Japan, where social and economic policies were both devoted to economic growth. Other countries have chosen to seek a balance between social and economic goals by placing social policy to the left and economic policy to the right.

To understand fully the goal orientation of a nation, therefore, we must position *both* its social programs and its economic policy. We shall proceed to do this for Canada in the following chapters.

Coping with Complexity

The diagnosis so far has been deliberately simplified in order to establish the principal argument. But social and economic policies are far too complex to be captured by a simple location on a two-dimensional matrix. Besides, this approach runs the risk of implying that government policies are more consistent than they tend to be. Particular countries may introduce growth-driven and market-driven policies at the same time. Similarly, various social programs may occupy different positions on the matrix.

What we have attempted to show is the centre of gravity for each set of policies (economic and social) at a given point in time. Like any other statistic of location on a scale, the notion of dispersion around the estimated location is implicit in this conceptualization, even though the statistic for dispersion is not displayed. Therefore, the policy location on the grid is a summary measure. It will always be possible to find examples of policies that are not consistent with the chosen location.

The usefulness of this framework lies more in its ability to provide a tool for discussing the direction of changes in policy orientation than in its characterization of policy at a given time. By examining current and proposed directions of change, we are able to predict and assess the probable policy environment and the future course of economic and social performance.

Chapter 2
WHERE CANADA STANDS

In many ways, Canada is superficially like the United States, in that it appears to possess a similar institutional structure. But Canada is really very different from its powerful neighbour in its goal structure and the commonly held views about the role of government. For the past fifteen years, Canada has been run by governments that have adopted an increasingly "hands-on" orientation, emphasizing social justice and distributional policies. In Figure 1.2, Canada can be found solidly entrenched in the top left-hand corner of the matrix, along with Britain. But there the similarity ends. While Britain appears to be moving towards the bottom right-hand corner, very little change is perceptible in Canada. If anything, developments such as the National Energy Program (NEP) appear to be drawing Canada in the opposite direction to the one that Britain is following. The NEP shifted the locus of strategic decision-making for the petroleum industry away from business firms and provincial governments and towards the central government in Ottawa. At the same time, the NEP's provisions for equalizing the prices being paid for crude oil supplies to refineries in all provinces are motivated by political goals, which have little to do with economic development, but appear to be designed to favour consumers living east of the Ottawa Valley line. Finally, changes in the country's tax provisions are designed to increase the federal share of revenues in order to finance federal programs of "hands-on" control of the industry (frontier exploration, Canadian ownership) and perhaps to contribute towards general revenues, which increasingly are being called upon to support social welfare programs.

What is the structure of the social goals to which the federal government has committed Canada? Three goals appear to predominate. First, there is a commitment to keep Quebec within Confederation. This squares with the federal government's vision of a bilingual country, with equal status for each of the founding communities. It spawned a considerable number of programs, regulations and practices to promote the use of French as an official language. It also gave rise to measures designed to enhance the economic welfare of Quebec, ranging from energy policies to ensure that the province has access to crude petroleum at prices equivalent to those that obtain in other provinces, to financial assistance for industrial projects — many of which had doubtful market potential.

Second, the government embarked on a series of programs to ensure that citizens in economically depressed provinces and regions were given access to government services of a level and quality approaching those enjoyed by citizens in the parts of the country that had attained greater economic development. Since many of these services are provided by provincial and local governments, the federal government undertook to make good their revenue shortfalls, through a system of equalization payments from general federal revenues. Equalization is essentially an equity measure, although many such programs have adopted the rhetoric of economic development. Equalization policies have been bolstered by policies intended to support Quebec, and vice versa; occasionally, it is difficult to distinguish one from the other. It is more than coincidental that the party in power throughout most of this fifteen-year period found its major electoral support in regions benefiting from these equalization policies.

The third goal — social justice — gave rise to a set of measures known as the social welfare system: the Canada and Quebec Pension Plans, unemployment insurance, and universal access to medical services and welfare. The latter two are administered by provincial governments, and revenue shortfalls in the have-not provinces are made up under the equalization system.

Each of these strategies calls for a huge and continuing commitment of resources. Taken together, they represent an attempt of epic proportions to reshape the way wealth and income is distributed in Canada. While critics of these programs claim that their achievements have been disappointingly small, their economic impact nevertheless has been substantial.

These choices give rise to two kinds of economic response. First, such expenditures are consumptive and add little, if anything, to the nation's capital stock. Second, since they place an immense financial burden on the federal government, it has raised its share of GNP from 15.6 per cent in 1965 to 22.0 per cent in 1983 (see Figure 2.1). Federal expenditures grew in real terms by 167.2 per cent over these years, a compound real growth rate of 6.0 per cent a year during a period when the economy as a whole grew at an average annual rate of only 4.1 per cent per year in real terms (see Figure 2.2).

How has this enormous increase in equity-based programs been financed? Three sources can be identified. First, there have been substantial increases in federal taxes. Total federal income from taxes of all sorts rose from $8.9 billion in 1965 to approximately $55.1 billion in 1982, an increase of 520 per cent, or an average annual compound increase of 12.0 per cent (see Figure 2.3).

Converted to real terms, this is an increase of 3.8 per cent a year, slightly slower than the growth in the GNP. Notwithstanding these rapid tax increases, federal revenues were unable to meet the demands for additional funds.

Therefore, a system of deficit financing was adopted. Expressed in constant 1971$, the net debt of the federal government rose from $11.7 billion in 1965 to $67.4 billion in 1982, a 476 per cent increase (see Figure 2.4). This represents an annual real compound rate of increase of 2.8 per cent. By contributing towards increases in the rate of inflation, federal deficits are an insidious form of tax on money-denominated wealth and income.

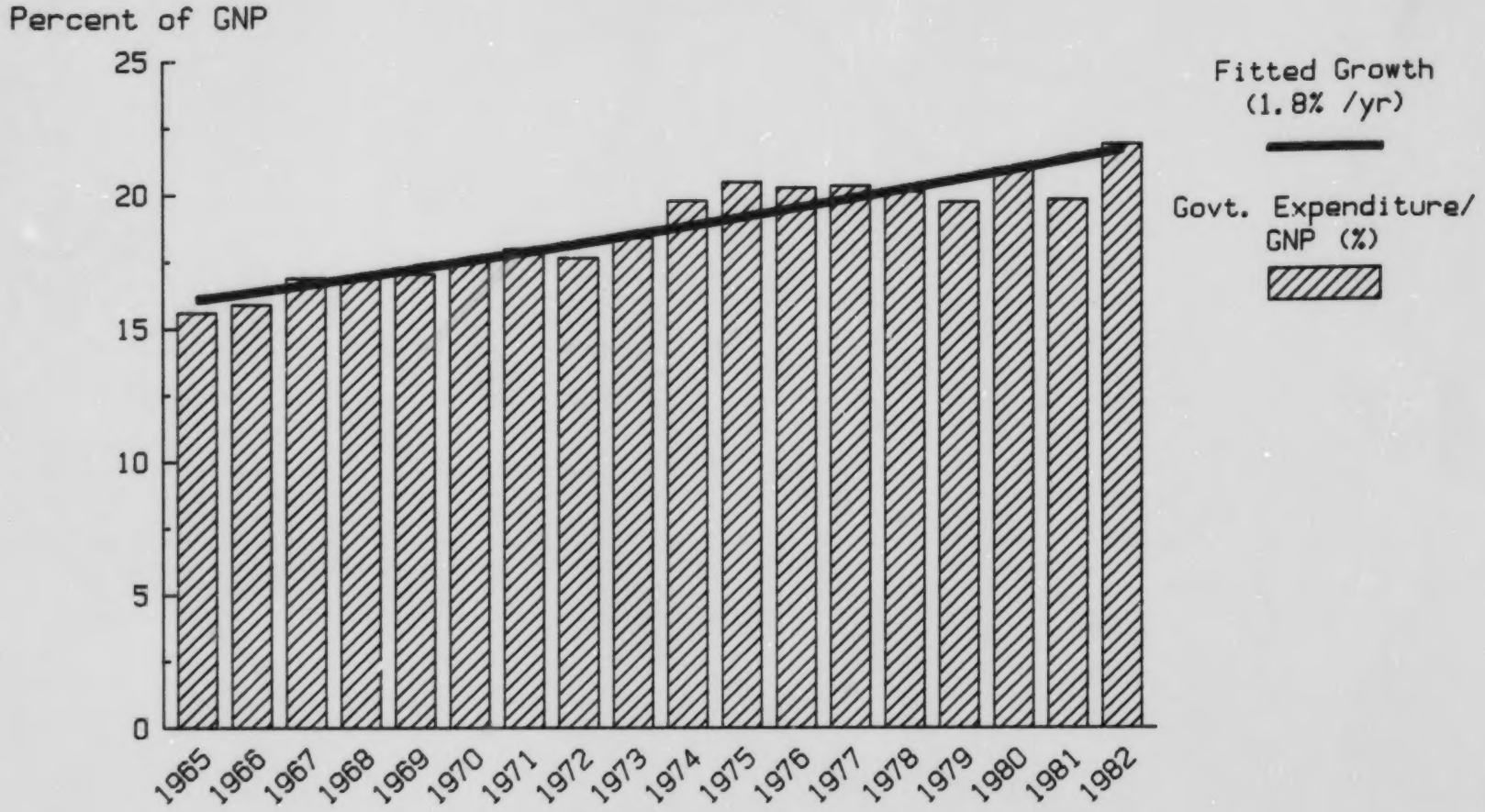
The third set of measures is more subtle and difficult to quantify. Every dollar of national income spent on consumption is one less dollar available for capital investment. Every dollar of foreign borrowing to finance social welfare spending carries with it a liability to meet interest payments and the eventual repayment of principal. There is no direct way to measure these effects, although macro-economic analysis can help us estimate what these may be. Despite these adverse effects, private capital formation in Canada remained robust during the period. Statistics show that net private capital formation grew from $8.1 billion in 1965 to $63.1 billion in 1982, a growth of 684 per cent (see Figure 2.5). Reduced to real terms, this is 5.0 per cent a year, slightly lower than the figures presented above for the growth in social welfare expenditures.

Fortunately for Canada, the enormous increases in the amounts spent on social policies coincided with a period of rapid growth in international markets. Growth in other countries created an increased demand for natural resource-based products, which are the mainstays of Canada's exports. Furthermore, the rapid real rise in commodity prices that followed the 1973-74 oil panic and the 1978-79 Iranian oil crisis led to revenue increases from commodity exports that far exceeded the growth in volume. Canadian national income grew from $55.4 billion in 1965 to $356 billion in 1982 (see Figure 2.6), in large part driven by a growth process stimulated by the boom in exports, which increased from $8.7 billion in 1965 to $84.6 billion in 1983 (see Figure 2.7). This spurt in commodity exports was accompanied by an equivalent growth in domestic demand for goods and services. While some part of this demand was met by increased imports, domestic manufacturing shipments to home markets grew from $37.3 billion in 1965 to $182.9 billion in 1982, a real increase of 3.6 per cent a year (see Figure 2.8). However, imports of manufactured products and raw materials increased even faster, from $8.6 billion in 1965 to $66.2 billion in 1983, a real annual increase of 6.3 per cent (see Figure 2.9).

Canadian military expenditures grew very slowly, from $1.9 billion in 1965 to $8.3 billion in 1983, a real rise of only 1.1 per cent a year (see Figure 2.10). This long-term trend was reversed in the 1980s, when Canada gave in to pressure from its military allies, particularly the United States, and began increasing military spending faster than other sectors of the economy. Nevertheless, Canada still spends only 2.0 per cent of its GNP for military purposes; the equivalent figures in the United States and Britain are 6 per cent and 4 per cent respectively. Certainly, the modest levels of Canadian military spending have helped attenuate the financial effects of the federal government's increased welfare expenditures.

2.1

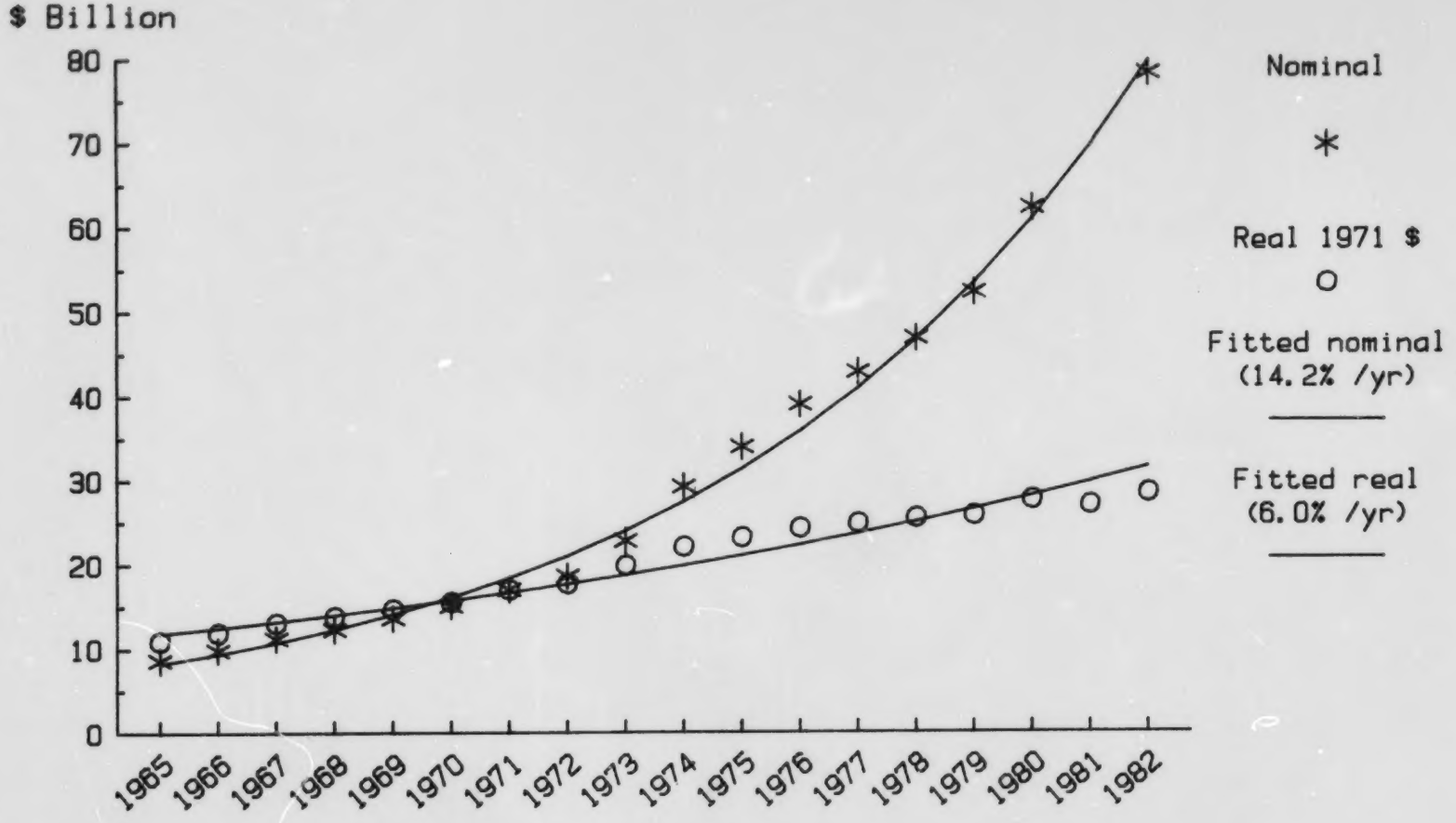
Federal government expenditures, growing at a real rate of 6% per year, have claimed an increasing share of GNP



Sources : Historical Statistics of Canada, 1981;
Public Accounts of Canada, 1978-79 to
1982-83

2.2

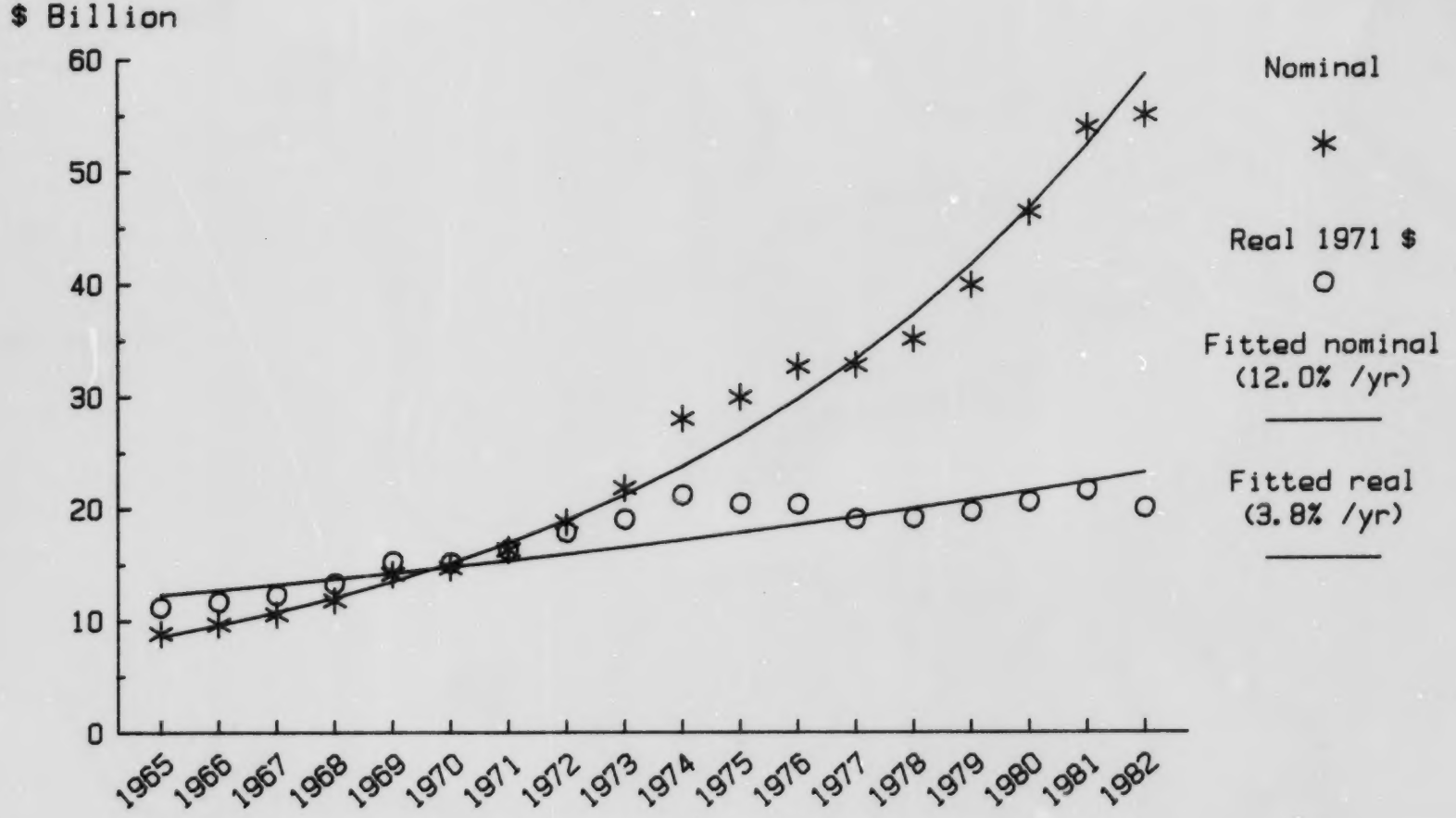
Federal expenditures grew 9.0 times in nominal terms or 6.0% per year in real terms



Sources : Historical Statistics of Canada, 1981; Public Accounts of Canada, 1978-79 to 1982-83

2.3

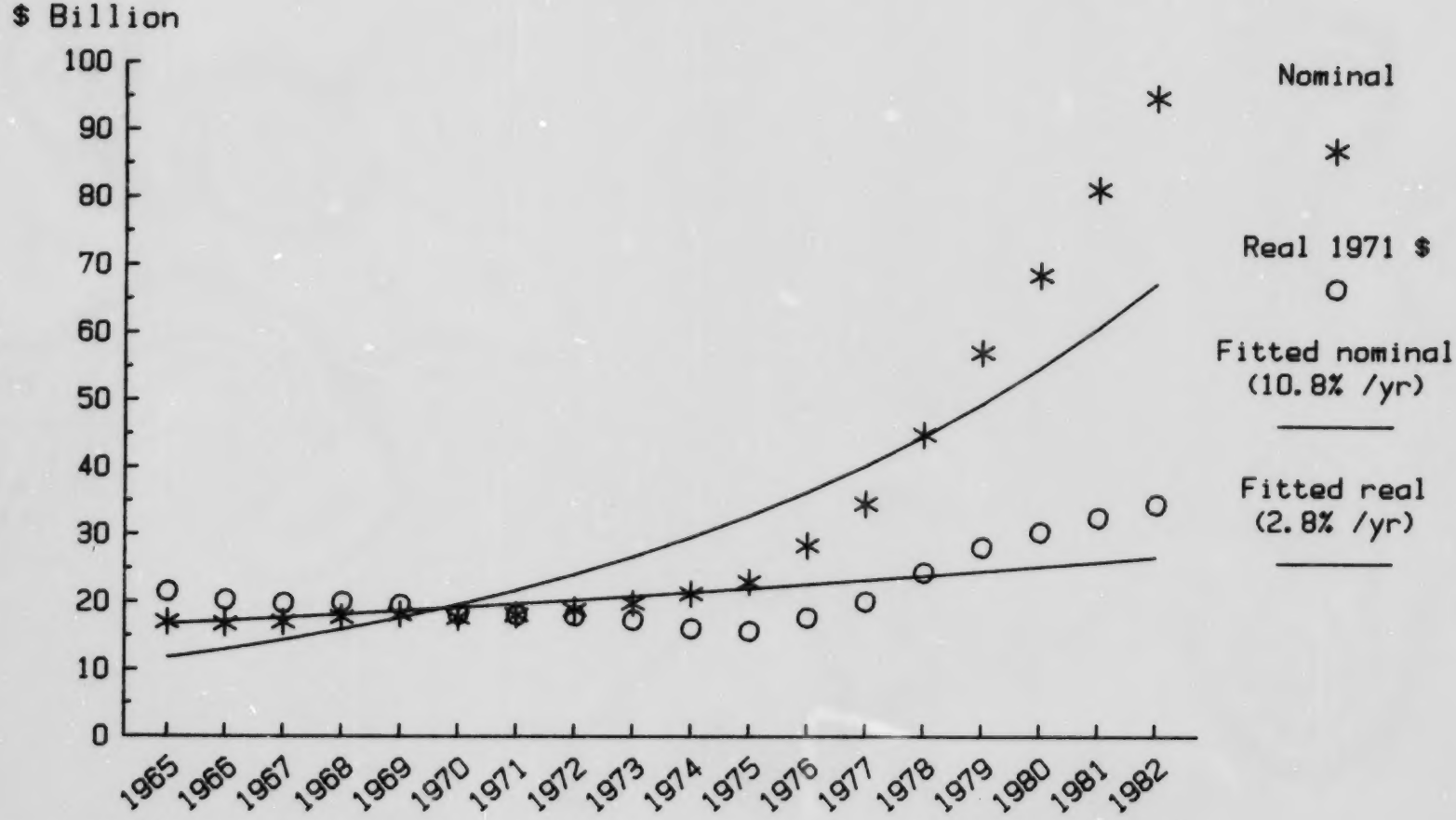
Federal revenues from taxes and other sources have risen 6.2 times, a real increase of 3.8% per year



Sources : Historical Statistics of Canada, 1981
Public Accounts of Canada, 1978-79 to 1982-83

2.4

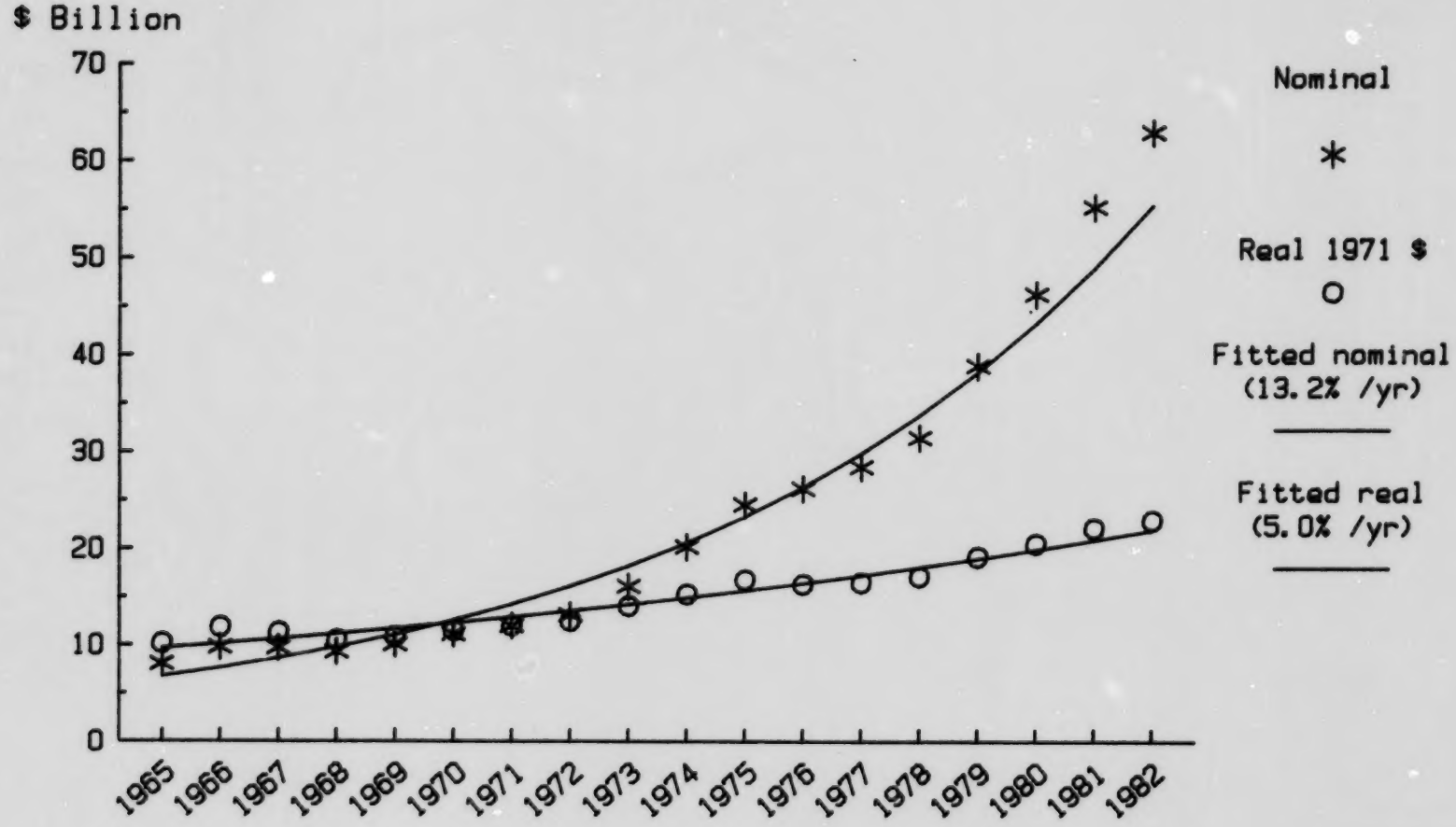
The net debt of the federal government grew by 476% in nominal terms, an annual real rate of increase of 2.8%



Sources : Historical Statistics of Canada, 1981
Public Accounts of Canada, 1978-79 to 1982-83

2.5

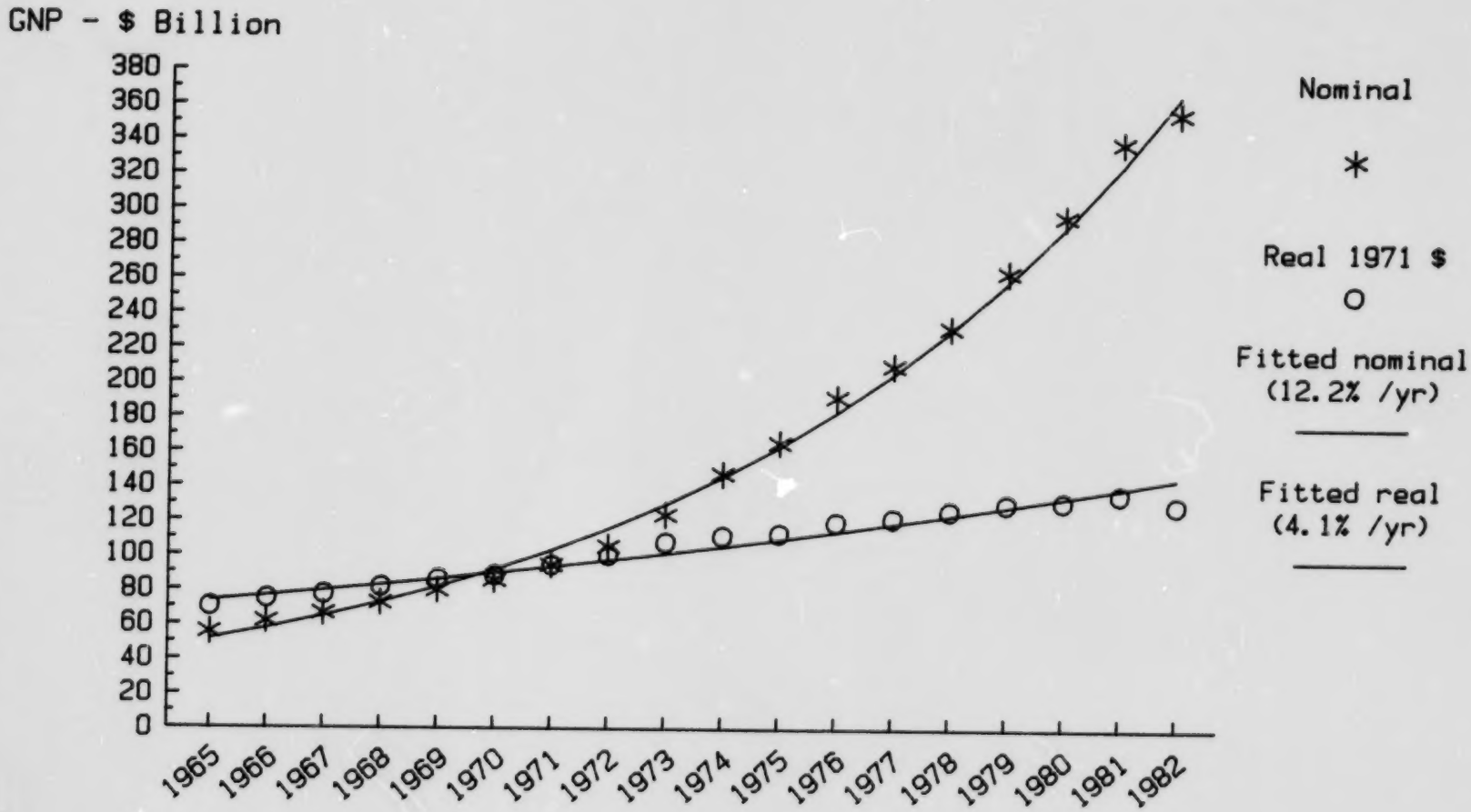
Private capital formation has proceeded at a healthy pace, growing 2.26 times in real terms



Source : Economic Review Yearly, 1982

2.6

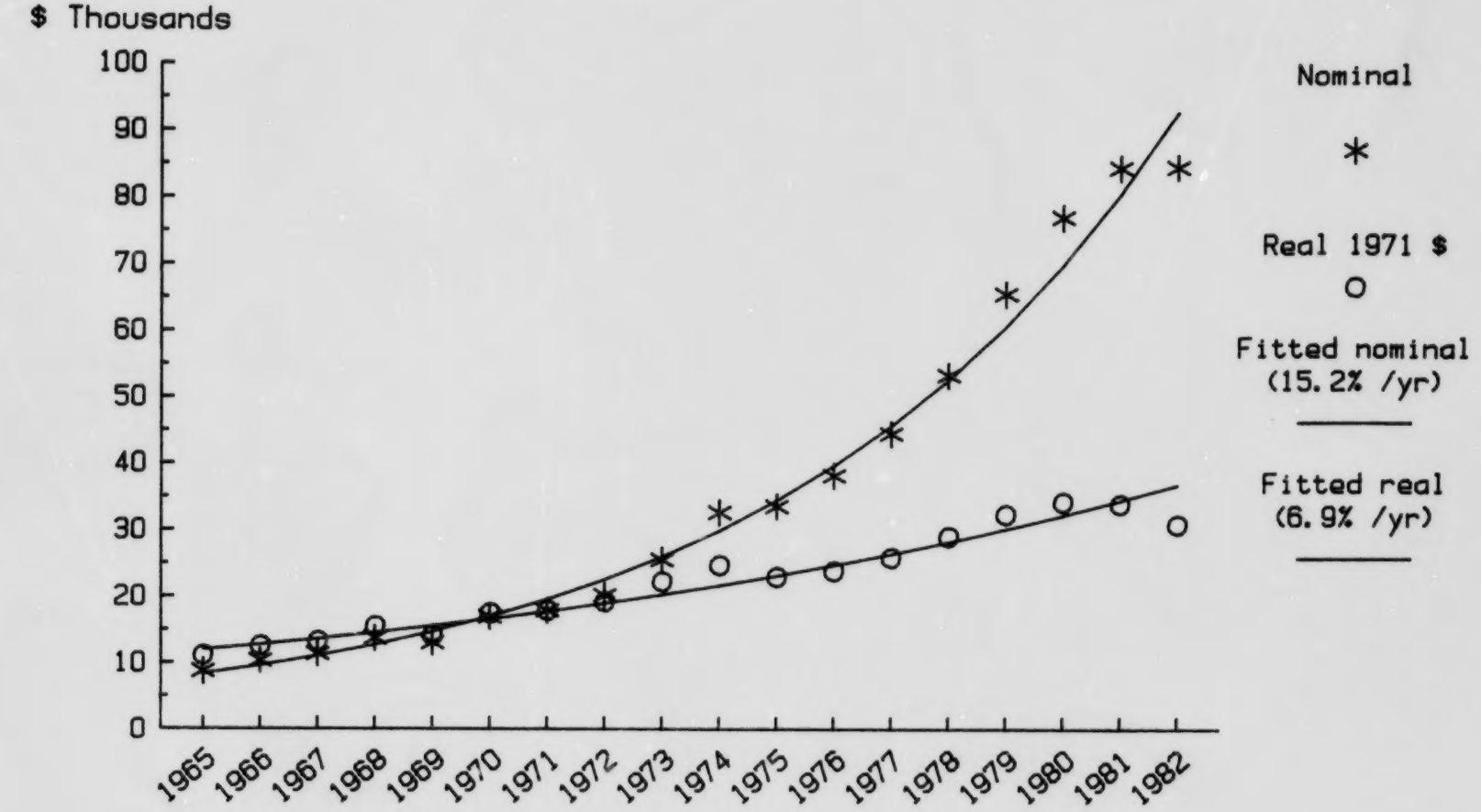
The Canadian economy grew at a compound real annual rate of 4.1%



Sources : Historical Statistics of Canada, 1981
Economic Review Yearly, 1982

2.7

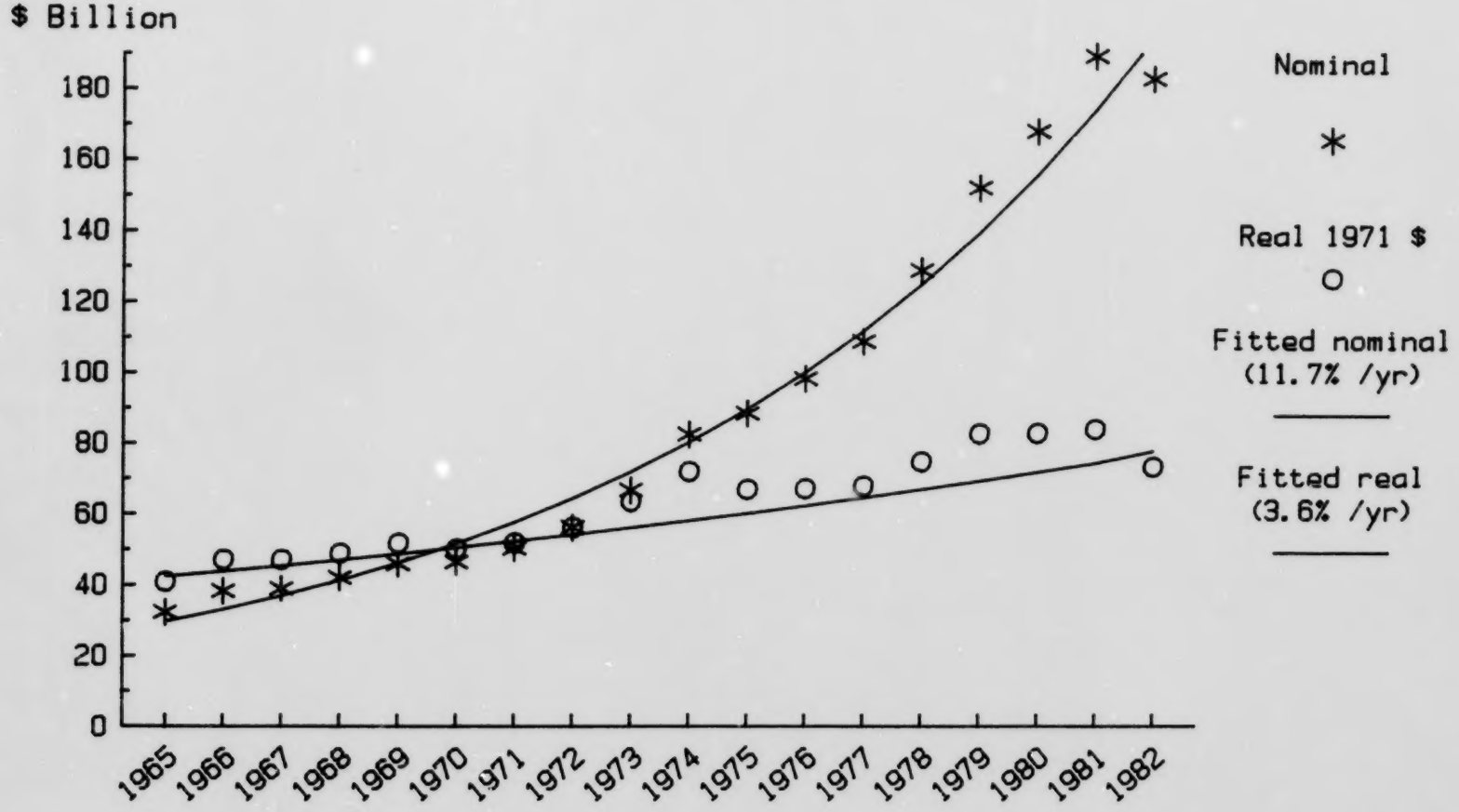
Merchandise exports have grown rapidly, particularly after the 1973-74 oil shock



Source : Bank of Canada Review, Table 74,
May 1984

2.8

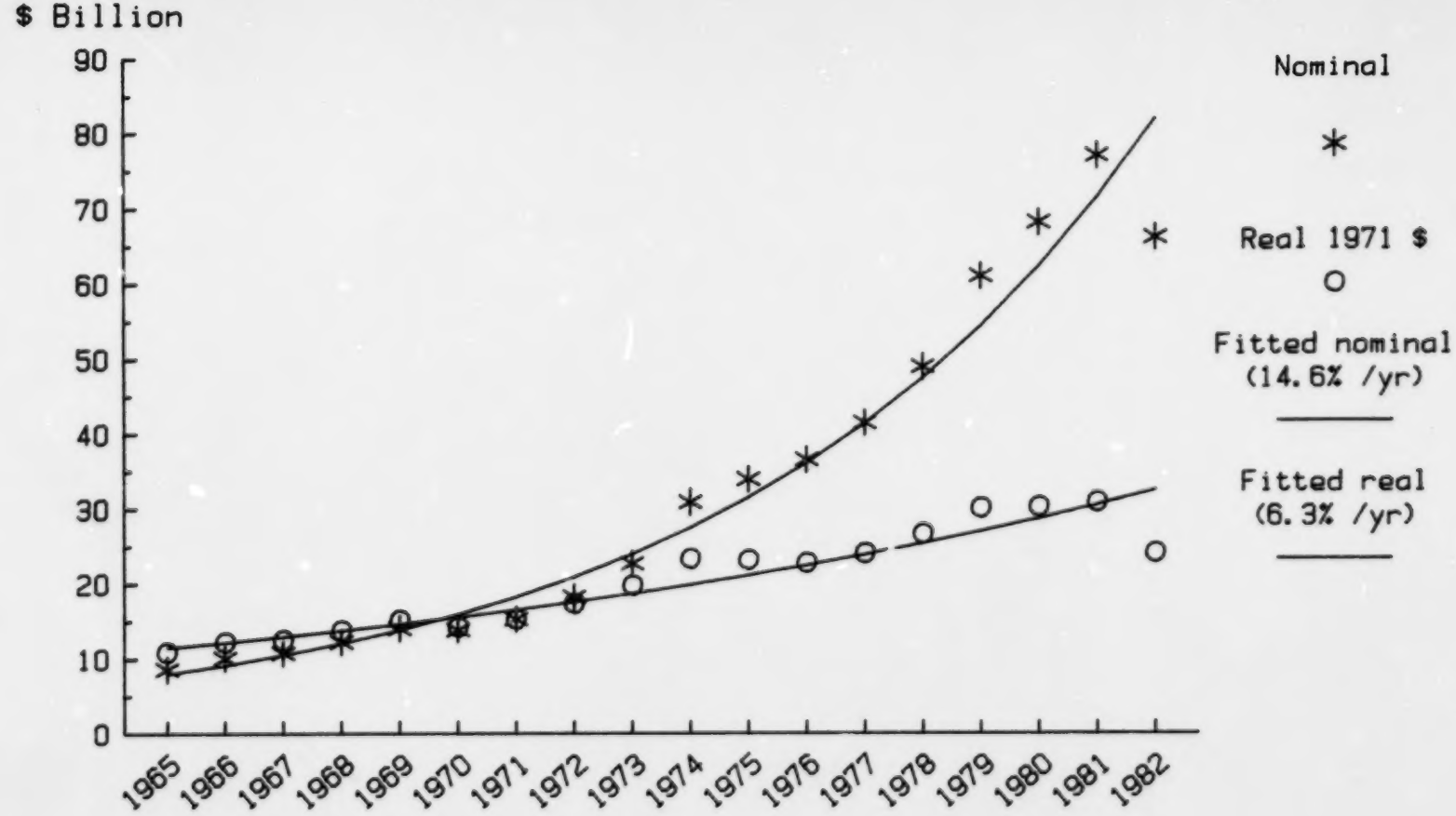
Manufacturers' shipments increased at a slower pace than the overall economy, particularly after 1973-74



Sources : Historical Statistics of Canada, 1981
Economic Review Yearly, 1982

2.9

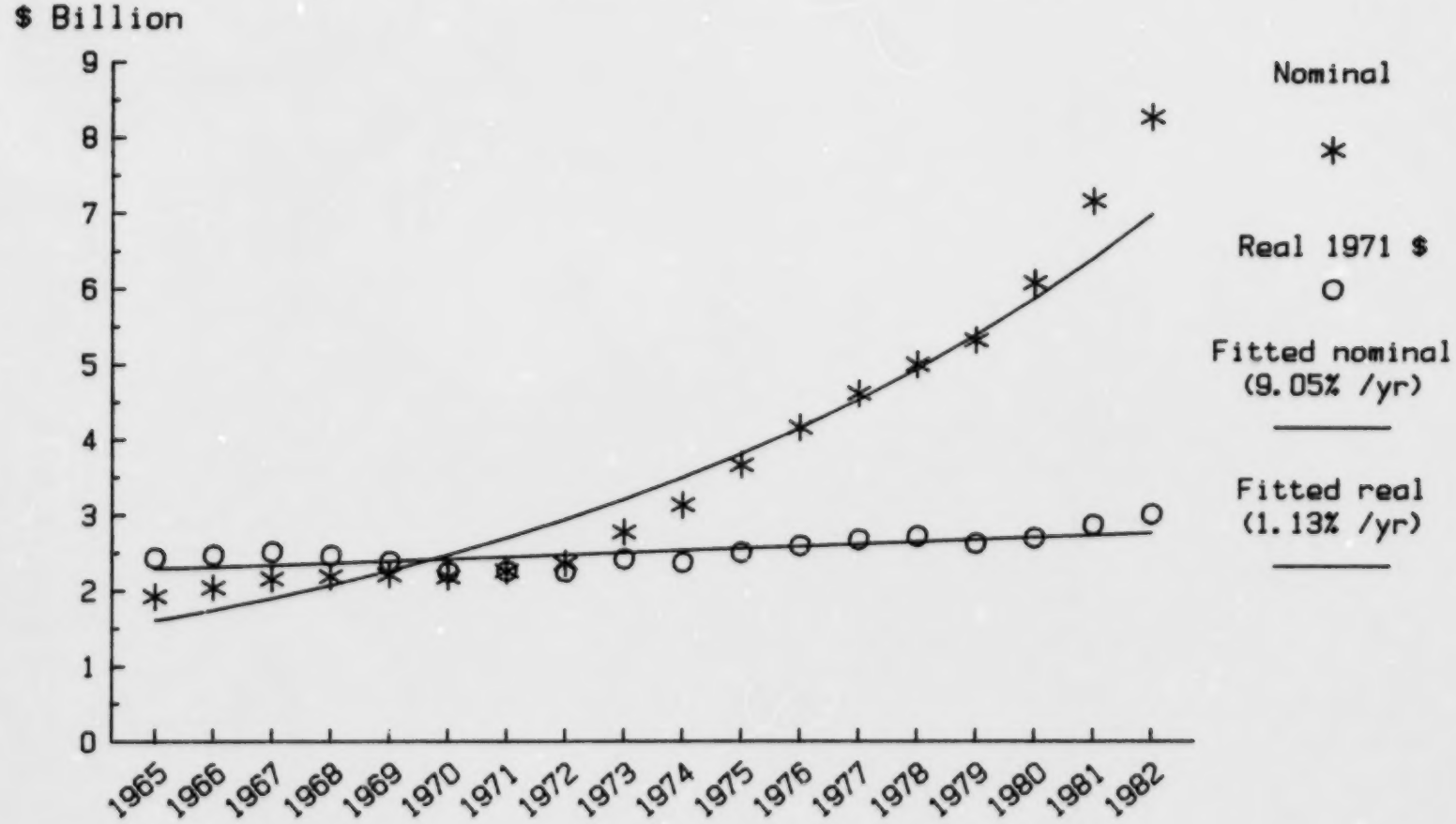
Merchandise imports grew rapidly at 14.6% a year, but more slowly than export growth, which was 15.2% a year



Source : Bank of Canada Review, Table 75, May 1984

2.10

Although defence expenditures grew in nominal terms, once inflation effects were removed, they stayed relatively static



Sources : Historical Statistics of Canada, 1981;
Public Accounts of Canada, 1978-79,
1982-83

What Does the Future Hold?

Can Canada continue increasing expenditures on social programs? What, if any, are the limits to this trend? Can the country even afford to sustain the gains that have been made?

Many social indicators show that there are fundamental flaws in the present national strategy. The problem lies not in the strategy's logic or its desirability, but rather in its premises, which are no longer realistic. First, the strategy depends on high levels of economic growth, particularly in export markets. With high growth, the Canadian economy was able to sustain increasing demands for resources needed for social programs. Moreover, even relatively inefficient operations can show a profit in high growth markets. Thus, when governments induced or subsidized new capacity in industry as part of a program to improve the lot of disadvantaged regions of the country, the market absorbed the output of these relatively inefficient units.

This high growth environment for Canadian exports no longer exists. The period of rapid international growth in commodities and products of primary industries is over. Major developed countries are turning their attention from growth in resource-intensive industries towards fostering knowledge-intensive industries, whose resource needs are very small. Further, resource consumption rates of the traditional industries have been fundamentally altered by adjustment processes set in place by reactions to the 1973-74 oil crisis and subsequent rises in commodity prices. As a result, the quantity of resource-based inputs per unit of output has been reduced significantly. Less steel is used in the average automobile; the thickness of newsprint is being reduced, so that fewer tons are required to provide a given number of newspaper pages; wherever possible, less expensive raw materials are being substituted for copper and zinc; and the ratio of coal input to iron output in blast furnaces is being reduced by technological improvements. These are merely rational responses to the substantial real rise in commodity prices that occurred between 1974 and 1979. The important point to bear in mind is that these trends are irreversible. Once the technology of doing more-with-less is set in place, the user has no incentive to go back to a more resource-intensive mode, even if the real prices of commodities were to decline. Instead, the remorseless pressures of competition in resource-intensive industries — automobiles, appliances, paper products, and so on — tend to make producers acutely sensitive to the need to keep down costs. They are likely to economize on raw materials in order to reduce costs.

While demand for the raw materials that Canada exports is therefore likely to shrink or at best remain static, worldwide supply continues to grow. Many desperately poor third world countries are improving their capacity to export raw materials. Copper concentrates are exported from Papua-New Guinea; coal is being mined in Mozambique. Other non-traditional sources of raw material exports are also growing. The American South is becoming a major exporter of forest products; Australia dominates the Pacific Rim trade in iron ore, coking coal, sugar and wheat; Chile is exporting newsprint. In each case, the new producer offers lower costs than existing producers. Sometimes this is the result of favourable natural endowments, such as climate or the resource base. At other times, low cost labour is the critical factor. And in several cases, national governments or international bodies provide subsidized capital. Whatever the reason, these new sources of supply are entering the market at a time when demand is static. Consequently, markets will remain soft and prices will probably decline in real terms. Canadian producers will find it more and more difficult to sustain the current level of exports and undoubtedly will lose their present share of the market.

Prospects for secondary manufacturing in Canada are affected by a different set of forces in the international marketplace. In labour-intensive industries — textiles, clothing, toys, and consumer products made of plastics — there is a flood of exports from newly industrialized countries — mainly Taiwan, South Korea, Singapore, Hong Kong, Mexico and Brazil. These countries are following the Japanese developmental strategy of export-led growth, coupled with protection of their domestic markets. By and large, these developmental states are finding ways to exploit their low-wage costs to increase exports. Their exports are overwhelming domestic producers in the developed countries, including Canada, where wage rates are often more than ten times higher.

In capital-intensive and technology-intensive secondary manufacturing, global competition predominates, not between countries but between multinational corporations. For instance, only three corporations — Kodak, Fuji and Agfa — dominate the photographic film market in every country of the free world. This is where economies of scale in production are so effective. Competition in these industries has become truly global, with the same few firms competing in each national market. Japanese corporations have chosen to focus on some of these industries as the country relinquishes its position in the labour-intensive industries that were the basis of its first wave of post-war economic development. Canada faces unique problems in this field. Very few Canadian-owned corporations engage in secondary manufacturing on an international scale. Much of the existing secondary manufacturing in Canada is done by subsidiaries of foreign multinationals in plants originally set up to serve a tariff-protected market. As these companies universalize their manufacturing systems, they tend to rely on fewer, more scale-efficient plants for high value-added segments, and they use subsidiary locations as satellite plants with low valued-added functions. Consequently, Canada's value added in these industries is unlikely to grow and may actually fall in many industries.

The most likely prediction is that there will be slow or negative economic growth in sectors that have been the mainstays of exports or industrial employment in Canada. Therefore, for the country to pursue a national strategy that primarily is set on finding better ways to slice the pie would be unwise. That pie is no longer growing. The national economy is beset by forces in the international marketplace over which it has no control. It is time for some of the energy and resources that have been devoted to enhancing social welfare to be directed elsewhere. Failure to respond effectively to the new imperatives of the international economic system will jeopardize Canada's economic health. Very soon, this will translate into an inability to sustain the gains in social welfare that have been achieved over the last twenty years. Those gains were predicated on the economy's capacity to provide resources to sustain social programs. If the economy falters, social programs inevitably must stumble too.

There is no more telling symptom of these problems than the stubborn refusal of unemployment rates to respond to cyclical patterns or to government initiatives. Historically, unemployment has fallen during upturns in the business cycle. However, the current economic recovery has not given rise to reductions in the rate of unemployment. While it is true that the unemployment picture in Canada is less *discouraging* than the position of European countries, severe problems remain. Most business firms are striving to increase output faster than employment. The last economic downturn assumed depression-like characteristics for many industries. The most important lesson for these industries is that more output can be produced with fewer employees by eliminating slack and replacing labour with capital. To remain cost competitive, these industries cannot return to the employment patterns that preceded the recession. Thousands of jobs have been permanently lost in the primary raw material and secondary manufacturing sectors.

So, as Canada returns to a period of economic prosperity, it faces a new challenge. Unemployment did not decline when the cyclical upturn took shape. Although inflation and record-high interest rates have fallen, unemployment continues to exceed 11 per cent. This imperils the nation's social fabric and poses a long-term threat to Canada that is every bit as serious as the separatist movement in Quebec, even though most Canadians are not aware of it. The safety nets of unemployment insurance and welfare were not designed to cope with persistently high unemployment over a long period of time; and the existence of a large pool of people enduring long-term unemployment while the rest of society enjoys relative prosperity is inherently unstable.

The most important political-economic challenge for the nation is to find a way of dealing with long-term structural unemployment. It is worthwhile to examine two polar approaches to this issue On the one hand, a redistributive approach could be taken, involving devices such as shorter hours of work, job sharing, early retirement, and so on. This assumes that the total pool of available jobs will not grow sufficiently to take up the manpower slack. Many of these measures will reduce industrial efficiency: early retirement can remove skilled personnel from the labour force when they are at the peak of their efficiency. If shorter work hours are not accompanied by reductions in earnings, labour costs will rise; job sharing frequently involves churning the labour pool. The cost of such approaches is twofold. First, redistribution involves a tax cost for the "haves," who will be asked to share with the "have nots," — a price they may or may not be willing to pay to achieve social justice and equilibrium. Second, efficiency losses have to be taken into account, as well as the possibility of creating a vicious circle. To the extent that employment-sharing reduces economic efficiency, it reduces industrial competitiveness and indirectly harms the economy. In the long run, as exports are hurt by competition from more efficient producers and imports further replace high-cost domestic manufacturing, it could well lead to greater unemployment.

The alternative is to tackle unemployment by relying on economic growth to make up for the jobs lost because of structural change. It is unlikely that such growth will come in sectors that have been the traditional sources of job growth. Sustainable growth must be based on competitive advantage in a changing world. It is to this issue that we must now turn. The following chapters will examine the existing structure of Canada's industrial portfolio in an effort to diagnose its problems and develop a prognosis. These chapters are followed by a set of prescriptions to tackle the problems we have identified.

Declining Relative Productivity

Compounding the problems described above are the disturbing trends in productivity in Canadian manufacturing, relative to its international competition. Manufacturing productivity in Canada has begun to lag seriously behind other industrialized countries. Figure 2.11 presents a comparison of changes in real output per hour in manufacturing in Canada, the United States and Japan. All three countries experienced a rise in real output between 1967 and 1983. This is not uncommon in the manufacturing sector, where real output per worker can be increased by higher capital intensity (capital per worker) and by productivity improvements from the learning-by-doing effect.

In 1967, the United States was ahead of both Canada and Japan in output per hour and it has maintained that position through more or less continuous productivity improvements. Japan started out with a relatively poor position, but it has made rapid progress and is closing the gap. If these trends continue, there is every likelihood that Japan will overtake the United States by the end of the 1980s.

In 1967, Canadian manufacturing output per hour stood halfway between the United States and Japan. For most of the years between then and 1974, Canadian productivity improvements kept on a par with those in the United States. After 1975, Canadian output per hour has been more or less stagnant. Japanese output per hour continued to grow at a fairly rapid pace; it overtook Canada's output in 1980 and is now significantly higher.

Comparisons of total compensation per hour for manufacturing show a different set of trends. Figure 2.12 presents these changes for seven selected countries. The amounts include both direct payments for salaries, wages, bonuses, and so on, as well as the cost of fringe benefits. All figures have been converted to US dollars. The data in Figure 2.12 are in the form of index numbers, using US compensation in 1977 as the base. Between 1965 and 1983, manufacturing compensation increased in real terms for all industrialized countries. Canadian rates remained lower than US rates for the entire period, though evidence from 1983 indicates that they are now catching up. Japanese rates were much lower than those in any developed country, although they have grown more rapidly; nevertheless, they were half the US rates in 1983.

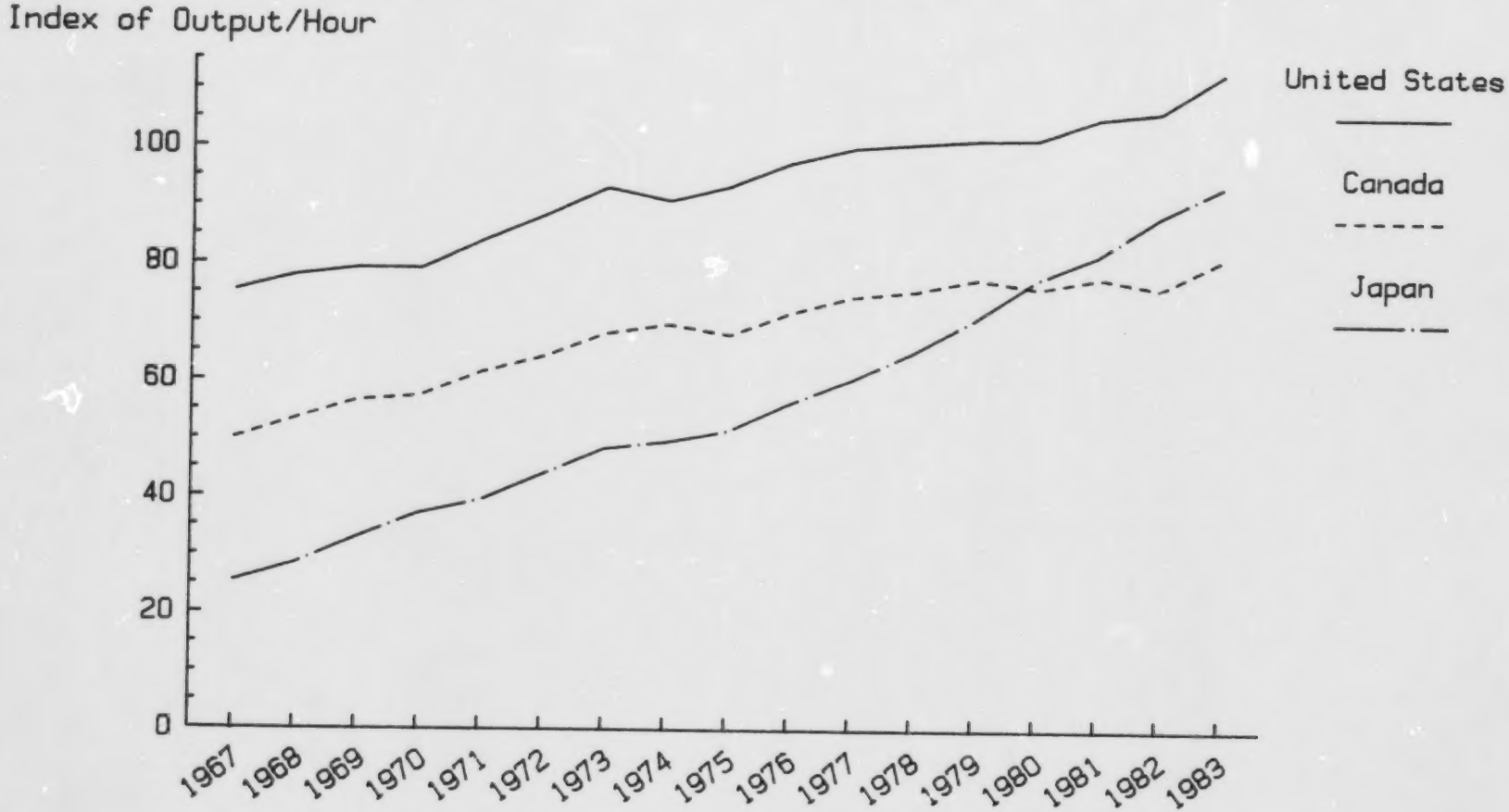
The combination of high output per worker and low compensation rates gives Japan a substantial labour cost advantage. In 1983, Japanese labour costs per unit of manufacturing output were 61.2 per cent of the equivalent costs in the United States. This competitive advantage is particularly important in high value-added product lines, where Japan is attempting to increase its market share.

Comparisons of unit labour costs in manufacturing are shown in Figure 2.13. The figures combine the data in Figures 2.11 and 2.12 and present the series as an index, with US costs in 1977 as a base. Unit labour costs increased in all the developed countries. However, Canadian costs reveal a worrying trend. Canada now has the second highest labour cost per unit (after Britain). Its costs are 111.2 per cent higher than Japan's.

These trends are a matter of grave concern for Canadian manufacturing. If they continue, Canadian products will become uncompetitive in world markets. Exports will be threatened and lower priced imports will replace domestic products in the Canadian domestic market.

2.11

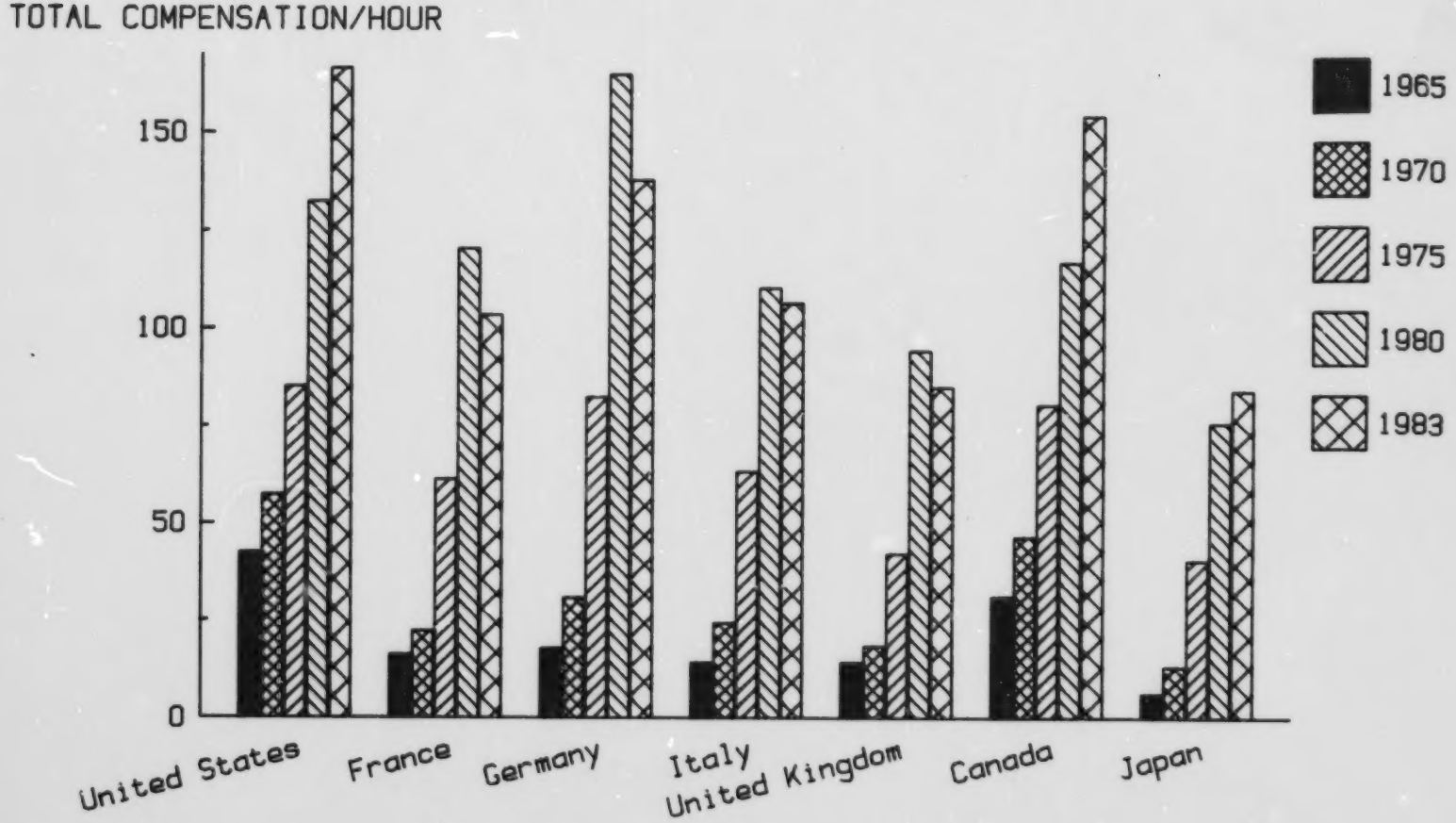
Real output per hour in total manufacturing, United States, Canada and Japan 1967 - 1983



Note : All figures are ratios with US 1977=100
Source : Daly and McCharles, Canadian Manufactured Exports, 1984

2.12

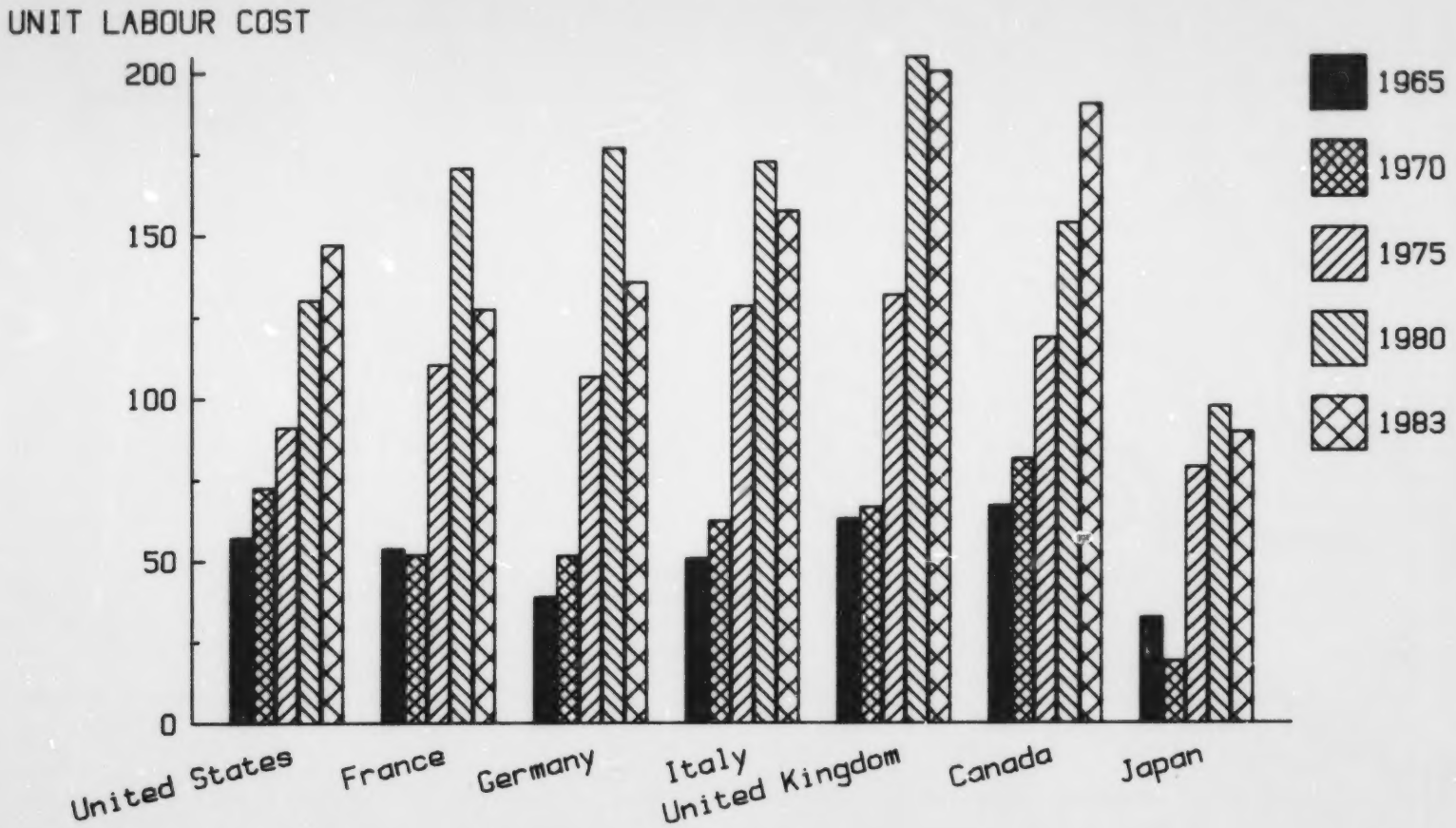
Total compensation per hour, manufacturing major industrialized countries selected years, 1965 - 1983



Note: All figures are ratios with US 1977=100
Source: Daly and McCharles, Canadian Manufactured Exports, 1984

2.13

Unit labour costs, manufacturing major industrialized countries selected years, 1965 - 1983



Note: All figures are ratios with US 1977=100
Source: Daly and McCharles, Canadian Manufactured Exports, 1984

Chapter 3
A DIFFERENTIATED INDUSTRIAL STRATEGY FOR CANADA

Let us now turn to the future. How can Canada cope with the problems described in the preceding chapters? What kind of policy framework will permit Canadians to realize their economic and human potential? How can the Canadian economy cope with the changes that have taken place in the international environment in which this country's industries compete? This chapter presents a framework for analyzing the country's economic performance with a view towards developing solutions.

It appears that the broad thrust of national policy towards industry has been more or less undifferentiated during the last few years. By this we mean that similar policies have been adopted towards all industrial sectors. Both the goal orientation of industrial policy and the role of government in policy formulation and implementation have manifested similar characteristics in all industrial sectors. Figure 3.1 is a graphic representation of this policy orientation. It places national economic policy in the top left-hand quadrant of the national strategy matrix, almost overlapping with social policy. This policy has favoured redistributional goals rather than growth/development; economic policy has been the chosen method of achieving income distribution. At the same time, a "hands-on" approach has been followed: government intervening on a case-by-case basis, rather than adopting broad policies that allow marketplace processes to determine the relative success of individual cases.

But to combine distributional goals with a "hands-on" approach has debilitating consequences for economic development. Attempting to achieve redistribution of income and wealth often leads to economic policies that weaken industry's competitive strength. Consider just a few examples. Placing an industrial plant in an economically disadvantaged region usually cannot be done without a government subsidy. This means diverting financial resources from other activities, where they could be used more profitably; or, alternatively, advancing the economic well-being of a disadvantaged group of citizens by forcing businesses to help them through the legislation of quotas, affirmative action programs and the like. This would shift the tax burden from the general public to the business community. Finally, setting up crown corporations to compete with private firms in an industry sector merely to ensure a particular course of development, which will not happen if decisions are left entirely to the private sector, is in essence deciding to accept lower overall economic returns in favour of more desirable social goals.

The adoption of a "hands-on" policy inevitably leads to a decreased emphasis on growth and development, because decisions have to be made through the machinery of government. In a democratic society, the government's decision-making apparatus is designed to achieve ends other than economic growth. To be effective, politicians must attend to their constituents' problems. Constituency issues and the efforts of politically active social groups have a strong influence on the political process. Olson (1982) has shown that the increased power of special-interest groups weakens the effectiveness of forces that govern the economic growth process. Bureaucrats are constrained to act in a manner that appears fair and even-handed, and hard economic choices are difficult and often impossible to make in such circumstances. Even programs that start out with economic development goals soon become constrained because of the need to be responsive to social issues. Eventually, as social priorities assume more urgency, the economic development dimensions of the program have to be watered down. Occasionally, economic objectives are abandoned when they come into conflict with politically driven priorities.

This diminution of economic development priorities under "hands-on" programs occurs when the nature of economic choice and of democratic political processes are not in harmony. Economic choices breed winners and losers. When one firm gains a share of the market, another must lose its share. When one salesman wins an order, the competing salesmen lose it. When one technological advance is accepted by the market, competing approaches fade away. But when economic decisions are made by government, they must be politically defended. It is here that the losers can mobilize to apply pressure that often is based on non-economic considerations. When a plant is threatened with closure, workers and their unions exercise their rights to petition government to save their jobs. When new technology threatens to reduce jobs in a particular industry, government is called upon to force firms to guarantee alternative employment to those who are to be laid off. When a large new factory is set up in one province, other provincial governments lobby the federal government and industry to set up similar facilities in their provinces.

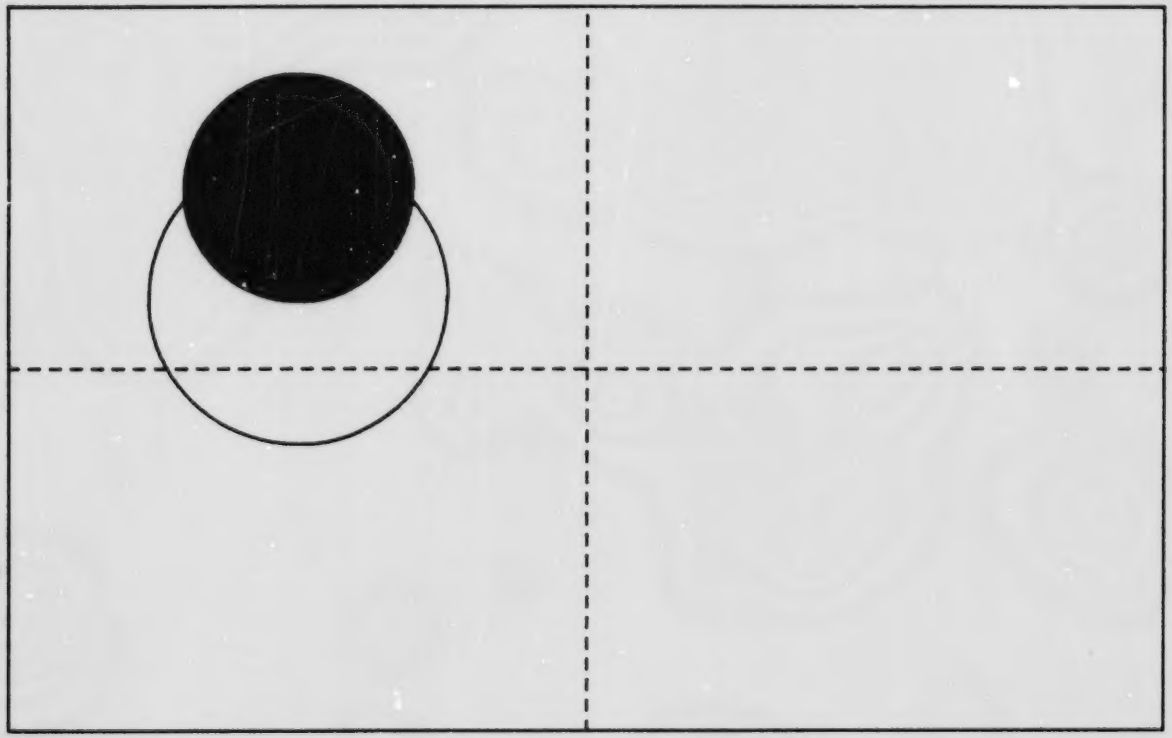
The harder the choice, the more likely it is that the losers or potential losers will resort to political pressure. Because of the intensity of this pressure, it is inevitable that administrators of "hands-on" programs will do their best to avoid making hard economic choices. Instead, they will seek those courses of action that are likely to please all interested parties, or at least not displease any group sufficiently to arouse a political response. In the process, economic resources are dissipated.

When it is applied to industrial policy, a "hands-on" approach inevitably becomes a distributionally orientated program. The only loser in such a process is the public at large, which is not organized to protect its general interest.

3.1

At present industrial policy is undifferentiated and follows social policy in both its goal orientation and the role of government

Role of Government



Dominant Goals of National Strategy

1. Black circle shows social policy
2. White circle shows industrial policy

Canada
Current

Let us turn now to an examination of how Canada's industries have performed over the last fifteen years under this regime. To do so, we must classify industries by their strategic characteristics.

Strategic Sectors

A "strategic sector" denotes a group of industries that are strategically similar in the shape of the competitive forces that govern their profitability. If federal policy towards industries within this sector are quite similar, the tasks of policy formulation and implementation are greatly simplified. Some policies affect all sectors and form the general economic climate. Others will be specific to the industries in a single sector, and can be tailored to fit the circumstances of those industries.

The principle of clustering by strategic sector recognizes that opportunities and problems depend on the circumstances of each industry. Some industries are characterized by slow growth in demand and will offer little opportunity for growth in output or employment. Others may serve fast-growing markets and so are potentially better equipped to meet some of the country's key economic policy objectives. Similarly, in certain industries, Canada's competitive position may be strong, while in others it may be facing major problems.

Forming sectors in terms of strategic characteristics is very different from the traditional techniques of grouping industries for the purposes of analysis. Most analytical schemes for clustering industries rely on classification by principal raw material, which is the underlying approach of the Standard Industrial Classification (SIC) code. But it is dangerous to adopt these schemes to analyze national strategy. By grouping together industries with similar raw materials, these schemes focus attention away from the competitive imperative of the marketplace. Policies that are not well grounded in the dynamics of competition are of little value.

We have clustered Canadian industry into eight sectors for this study.

1. Commodity Sector: mature industries in which Canada has a substantial competitive advantage.
2. Sunset Sector: industries where Canada has lost its competitive advantage mainly because they are labour-intensive, and because Canadians can no longer compete with efficient producers in low-wage countries.
3. High Technology Sector: where a steady flow of funds is needed for research and development to improve products and processes.
4. Capital-Intensive Sector: where scale economies in production and/or marketing require large capital expenditures to maintain and develop capacity.
5. Labour-Intensive Sector: for industries other than those that fall in the Sunset Sector. Typically, capital-related barriers to entry are not significant.
6. Transport Equipment Sector: this sector is dominated by the automobile industry, whose unique strategic characteristics have been shaped by the Canada-US Auto Pact.
7. Energy Sector: which includes both the fossil fuel industries and electric power.
8. Renewable Resource Sector: for agricultural products and fish. It does not include the forest industries, which fall into the Commodity Sector because resource exploitation policies in these industries are more akin to mining.

Together, the industries in these sectors form the Canadian industrial portfolio. Each sector's economic role is distinctive (Figure 3.2 displays the roles of the Manufacturing Sectors). The Commodity Sector is central in exports but plays a less important, albeit significant, role in gross domestic product (GDP) and employment. The Sunset Sector is a major employer, but its contributions to exports are negligible.

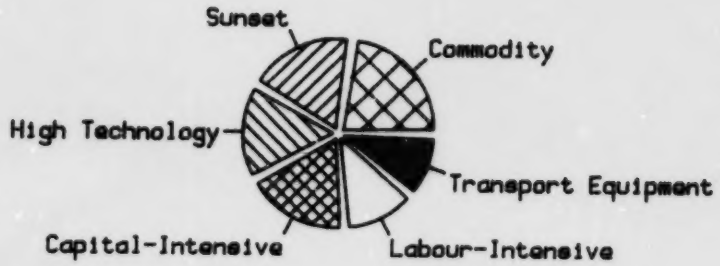
The economic roles of these sectors have changed very little over the last decade or so. Figure 3.3 displays the pattern for employment. Similar patterns can be found for exports and value-added. It shows that the Canadian portfolio has undergone relatively little adjustment, even though external circumstances have changed. This is a theme to which we shall return in succeeding chapters.

By examining growth rates in exports, value added and employment on a sector-by-sector basis, we can gain considerable insight into the performance of the overall portfolio. Figure 3.4 shows these patterns for the 1976-81 period. It is clear that most sectors did not generate as much employment as they might have. Export growth was poor in all sectors except the Labour-Intensive, which started the period with a modest base level.

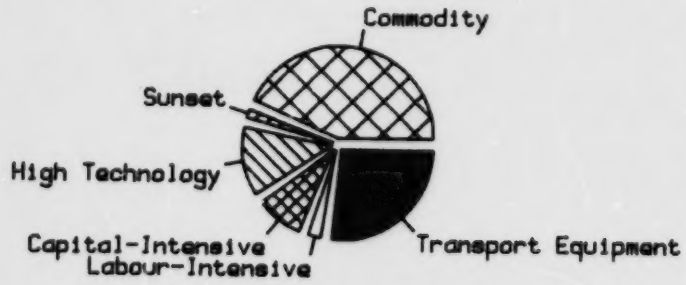
The next two chapters will examine changes in the comparative and competitive advantages of these sectors and their component industries in order to discover the reasons for the relatively poor economic performance shown in Figure 3.4.

3.2

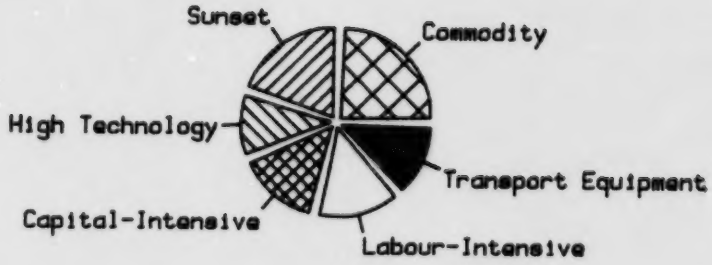
Each sector of the Canadian portfolio has a distinctive economic role



Total Annual Value Added was
$ 58.0 B



Total Annual Exports were
$ 53.4 B



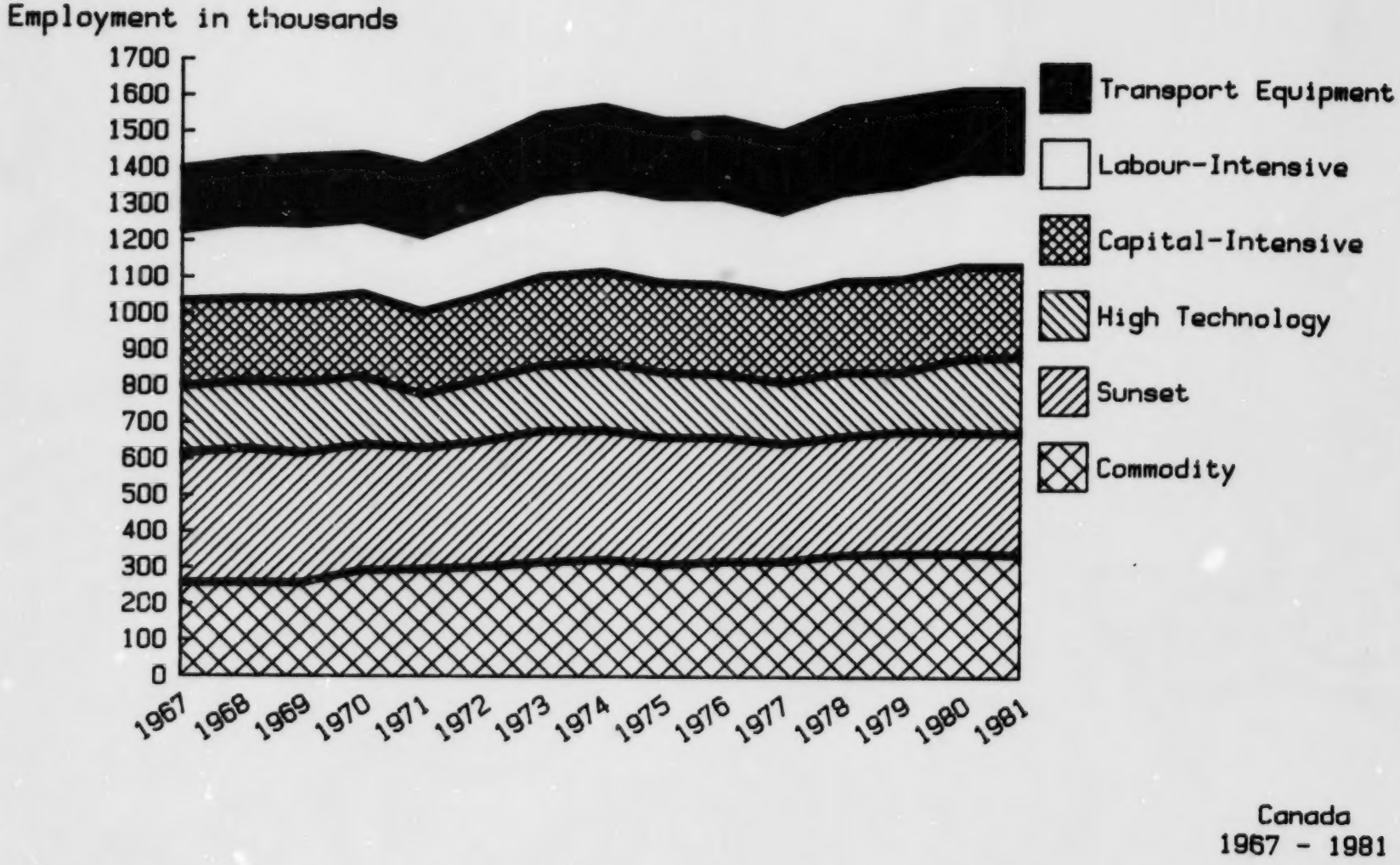
Total Annual Employment was
1,660,000

1. Value Added annual avg. in real $ 1971 Billion
2. Employment figures are annual averages in 000s
3. Exports are annual avg. in real $ 1981 Billion

Canada
1976 - 1981

3.3

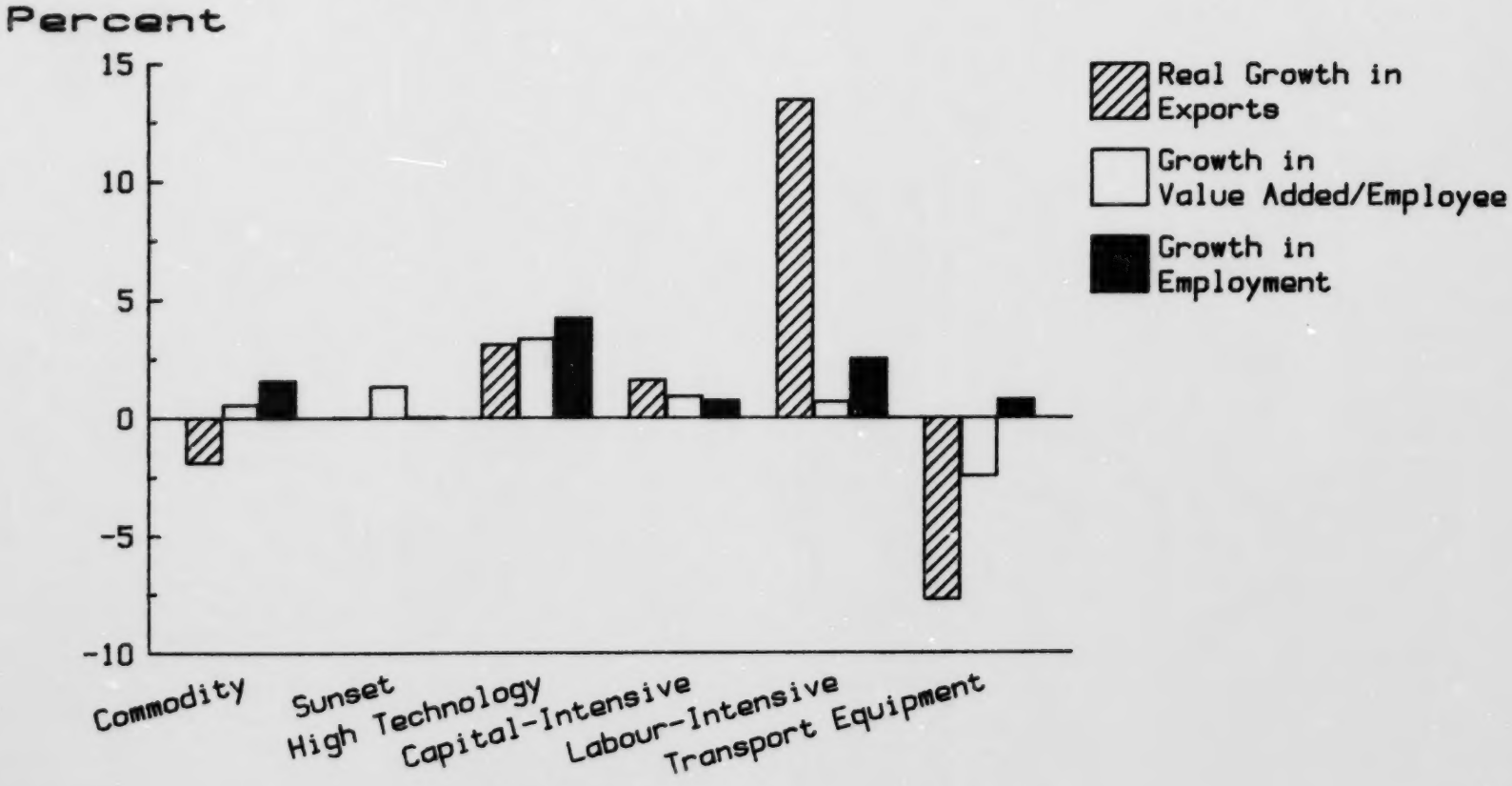
The pattern of employment by sector changed very little during the period



Canada
1967 - 1981

3.4

Most sectors performed poorly in the generation of employment



1. Export growth is real from 1976 to 1981
2. Value Added/Employee is real from 1976 to 81
3. Employment is annual % change from 1976 to 81

Canada
1976 - 1981

Chapter 4
DYNAMIC COMPARATIVE ADVANTAGE

That nations differ in their ability to compete in different industries is something most people would acknowledge readily. Most countries will be more competent in a few industries relative to other countries. Countries can gain from specializing in those industries in which they have comparative advantage, and trading their products for others in which they have a comparative disadvantage, even if they are more productive generally than their trading partners. Earnest advocates of free trade would have us believe that each nation that co-operates by playing the game fairly (without trade barriers) also maximizes its own real income. A great tradition of political-economic thought has evolved, stretching from the work of David Ricardo in 1817 to the more recent writings of Heckscher, Ohlin and Samuelson, who have linked a country's comparative advantage to the relative abundance of the factors of production in that country, compared with its trading partners.

Despite its elegance, trade theory is essentially static. It has not successfully explained how changes occur in the pattern of international competitiveness. It has little to say about the factors behind Japan's success in resource-intensive industries, such as steel, all the more astonishing since the country has little iron ore and coal. Reliance on trade models of this type would have caused Japan's policy-makers to avoid the steel industry and concentrate on labour-intensive agricultural products, such as wet rice cultivation. Instead, Japan has developed a formidable and competitive steel industry, with a major share of world-wide steel exports and an enviable cost structure. Leontief (1956) demonstrated that the United States exports labour-intensive products and imports capital-intensive products, contrary to what the theory of factor abundance would lead one to expect from a capital-rich, high labour-cost country.

The theoreticians have been silent about how changes in comparative advantages occur. They assume that "the adjustment process operates smoothly at the margin so that the system remains in equilibrium" (Scott, 1984:6). One major shortcoming of this approach is that it does not account for dynamic factors that lead to changes in comparative advantage.

The most important dynamic factors arise from interactions between the rate of growth in different markets and the rate of unit cost reduction, which in turn is dependent on market share. The Japanese recognized the importance of these factors in the mid-1950s (Shinohara, 1957); their Ministry of International Trade and Industry (MITI) based its industrial policy on two criteria developed from a new dynamic theory of comparative advantage.

Let us examine these issues more closely. MITI established two criteria for selecting industries under their industrial development strategy. The first was called the "income elasticity criterion" — industries whose demand increases with rising incomes are said to be "income elastic." MITI sought to identify industries where growth in world export demand would be very high because the income elasticity of their products was high. In the period of rapidly rising real world income between 1950 and 1975, demand for income-elastic products grew several times faster than overall demand. The competitive environment of high-growth industries is fundamentally different from that which obtains in low growth markets. High growth provides the opportunities for capacity expansion and the rapid development of cumulative production experience. Since unit cost reductions are related to cumulative volumes, costs can decline quickly in fast-growth industries.

The actual rate of cost decline (slope of the experience curve) varies by industry. MITI called this the "comparative technical progress criterion": technology applied simultaneously to the product and to the process of making it leads to a combination of greater consumer benefits and lower unit costs. By targeting industries with a great deal of potential for such technical progress, the Japanese developed comparative advantage in industries in which they started out with poor initial endowments. Thus was born the concept of "dynamic comparative advantage" (Shinohara, 1982), which held that a nation could choose the industries in which it would compete in the future and so shift the pattern of its competitive advantage among industries. When seen in this light, comparative advantage takes on an entirely new perspective. The classical static view concentrates on a nation's existing endowments of indigenous resources of the factors of production and on the search for industries that provided opportunities for best exploiting each nation's configuration of these endowments. In Canada, it led to a preoccupation with this country's vast forest and water resources and with an industrial structure which led the country's industrialists to be pejoratively labelled as "hewers of wood and drawers of water."

Viewing comparative advantage in a dynamic framework, Japanese industrial planners in MITI set about building international competitiveness in a limited number of industries that met the two criteria. Their decisions flew in the face of conventional wisdom. The industries they chose to foster — steel and chemicals, for example — were capital intensive. At that time, capital was very scarce in Japan, but labour was relatively abundant (unemployment was a serious problem). The classical view would have recommended that they choose labour-intensive industries that required relatively less capital. But such a choice would have

condemned the country to continued dependence on agricultural activities and on industries requiring low skill levels — the typical configuration of a less developed economy. Instead, the path that MITI chose to follow involved a continuous upgrading of skills and technology along directions which are not subject to early diminishing returns. The result was that these policies made a significant contribution to Japan's celebrated "economic miracle."

We have chosen to adopt a dynamic comparative advantage framework for our study. We shall first describe the evolution of Canada's industrial structure within this framework. If we assume that Canada's fundamental national economic policy will not change, we can forecast a future for this country that will be unacceptable in several respects. Present economic policies will not lead to sufficient economic growth to provide an acceptable standard of living. Most importantly, they will do little to tackle unemployment. By relaxing these assumptions, we shall develop a set of prescriptions for changes in policy.

Measuring Comparative Advantage

Direct empirical measurement of comparative advantage at a reasonable level of disaggregation presents formidable problems. Compiling accurate cost data at the micro-level and aggregating them to the industry level for comparison is difficult enough. Incorporating adjustments for product quality, and intangibles such as goodwill is even more problematic. But taking account of distortions caused by tariff and non-tariff barriers makes direct measurement of comparative advantage from the cost side nearly impossible. When such attempts are made, the results have to be surrounded by so many reservations and caveats that they are practically unusable.

One has therefore to proceed by indirection. The concept of "revealed comparative advantage" developed by Balassa (1965 and 1977) is useful in this regard. He suggested that:

> ...the commodity pattern of trade reflects inter-country differences in relative costs as well as in non-price factors, this is assumed to "reveal" the comparative advantage of the trading countries.
>
> (Balassa, 1977:327)

Balassa computed an index of revealed comparative advantage by dividing a country's share of the exports of a given industry by its share of the combined exports of all manufactured products. His work was restricted to thirteen highly developed economies. Scott (1984) extended Balassa's work considerably. Using newly available data on world trade, Scott calculated an index (which he named ERCA—Export Revealed Comparative Advantage) for 56 manufacturing industries over the years 1965-81. We have adopted Scott's measure for our study. This is defined for industry A as:

$$ERCA_A = \frac{\text{the country's share of world exports of industry A}}{\text{the country's share of world exports of all industries}}$$

Our measurement of ERCA includes agricultural products, primary materials and manufactured goods. Since Canada's economic structure is heavily dependent on the former two, they affect the relative competitiveness of industries in the manufacturing sector through their influence on macro-economic conditions, such as the markets for labour and capital, and the exchange rate. ERCAs for manufacturing industries are therefore more realistic when computed against a base that includes the other two sectors. Scott's work on the comparative advantage of US industries covered the manufacturing sector only. His figures are not directly comparable with those presented in this chapter.

ERCA is an indicator of the comparative position of an industry within a country. By examining the pattern of ERCAs at a given period of time, we obtain a synoptic picture of a country's economic structure. For example, we can see the extent to which the country is dependent upon only a few sectors or whether its economy is more widely dispersed. We can examine the extent to which the pattern of ERCAs relates to key strategic variables, as we do later in this chapter.

When viewed over a sufficiently long period of time, changes in the ERCA for a given industry provide some insight into the shifts in the position of that industry within the country's overall industrial portfolio. A sustained rise in the ERCA would indicate that the industry in question has increased in international competitiveness relative to other industries. A similar analysis can be conducted at the sector level. When we examine the pattern of change in all sectors, we see how an economy is adjusting to changes in the international competitive environment.

ERCA is not a measure of the competitive strength of an industry or a sector in the world market. It does not show whether a country is doing better or worse than other countries in that industry or sector. For this purpose we use another measure called "Relative Market Share," which is described in Chapter 5.

Canada's Comparative Advantage

Industries with ERCAs in excess of 100 are the ones in which the country has a comparative advantage. Let us examine the pattern for Canada. Figure 4.1 shows the ERCA for the pulp and paper industry between 1967 and 1982. Canada has considerable comparative advantage in this industry because of this country's superior natural endowment in softwood forests, which yield long fibre pulp. However, Figure 4.1 shows that this comparative advantage changes over time, falling until 1973 and rising subsequently, reflecting how well this industry performed compared to other industries. Similar charts can be developed for all the 71 industries studied in this analysis. Taken together, they provide an informative picture of the Canadian economy.

Before examining this further, we need to summarize the data. A curve can be derived for each time series of ERCAs, summarizing its relative starting position and rate of change. We use a log-linear fit for this study. The intercept of this curve shows the starting level of the ERCA, with random variations removed. The slope shows the rate of growth or decline over the whole period, again with random variations removed.

Figure 4.2 shows the intercepts for Canada, in descending order. Only twenty-one industries exhibit a comparative advantage above 100; most of these are based on the country's raw material resources. Of those ten industries with an intercept above 200, the only one from secondary manufacturing is the passenger car industry.

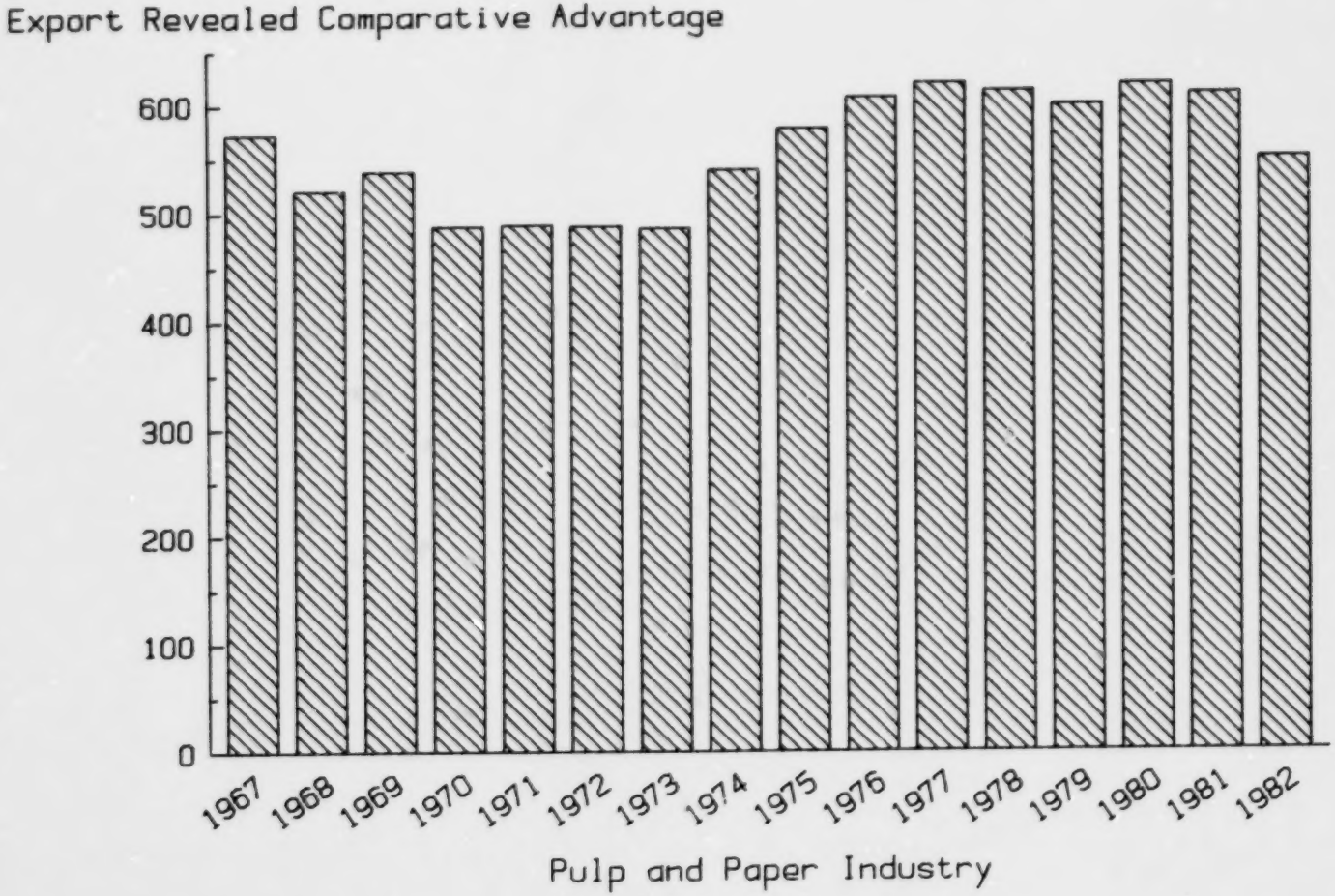
Figure 4.3 shows the rate of change of ERCA for each industry. As with Figure 4.2, it is the overall pattern we are seeking, not the data about each industry; these are presented separately. No clear pattern can be seen in Figure 4.3. In seeking to establish these overall patterns, it is useful to rank the industries on the horizontal axis in ways that are strategically relevant. One such ranking is the rate of growth of world exports of the sector in question (see Figure 4.4). The asterisk shows the average ERCA of the last three years of the period, 1979-81. When the asterisk is above the line (which shows the average ERCA for the entire period), it indicates an improvement in the industry's comparative advantage. Conversely, when the circle (which is the average of the first three years) is above the line, this reveals a decline in comparative advantage. The overall pattern of change that appears in Figure 4.4 is called the country's "transition pattern." Of course, ideally, a transition pattern should have more asterisks above the line on the left (the high growth sectors) and more circles above the line on the right. The pattern for Canada is mixed at best. A few high growth sectors have improved comparative advantage, but most show little change in their comparative advantage. The principal conclusion to be drawn from Figure 4.4 is that the overall pattern of change of comparative advantage of industries in Canada shows little strategic improvement. There are, of course, some notable exceptions to this generalization.

Let us turn to Figures 4.5 and 4.6 to examine this finding more closely. The cross-hatched bars show the difference between the 1967-69 average ERCA and the overall average ERCA for 1967-81, while the solid bars show the same for the 1979-81 average. Again, the 71 industries are ranked from left to right in order of real growth in worldwide exports. The most desirable pattern for this figure would be to have many solid bars above the line on the left and more plain bars above the line on the right. This would indicate an economy that is favouring high growth industries. The growth rate of an industry is closely related to private and public economic goals such as profitability, the generation of wealth, and higher employment. Therefore, a successful transition towards improving the comparative advantage of high growth industries with steep experience curves benefits a country's economic performance.

Figures 4.5 and 4.6 show clearly that Canada's record on transition is quite mixed. Much of the improvement in comparative advantage has taken place in low growth sectors. Indeed, in nine of the ten lowest growth industries, Canada's comparative advantage improved. On the other hand, of the ten highest growth sectors, Canada's comparative advantage improved in only two. To sum up: Canada appears to be doing well in sectors where trade growth is static or declining, but is losing comparative advantage in sectors where world trade is growing.

4.1

The comparative advantage of Canada's pulp and paper industry reflects its major role in the economy

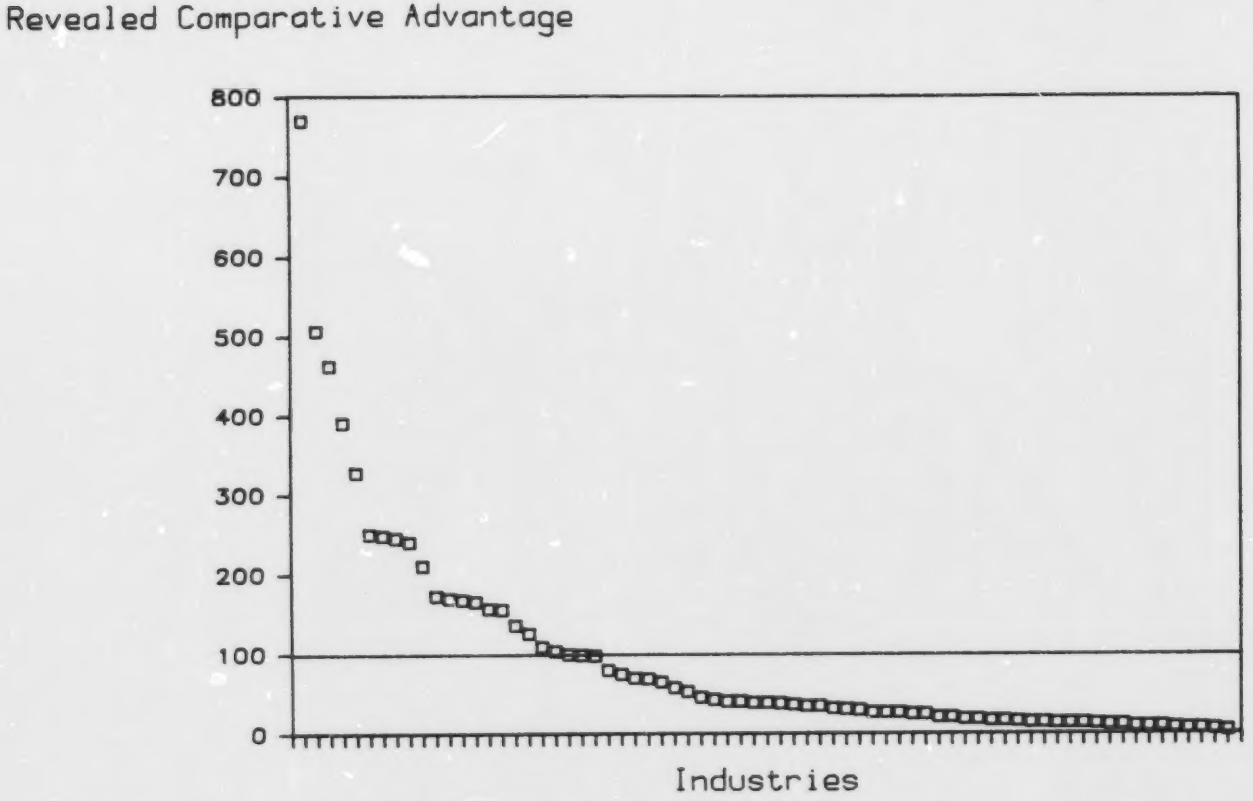


Comparative Advantage based on 71 sectors

Canada
1967 - 1982

4.2

The distinctive structure of Canada's comparative advantage is shown by the position of its industries in 1967

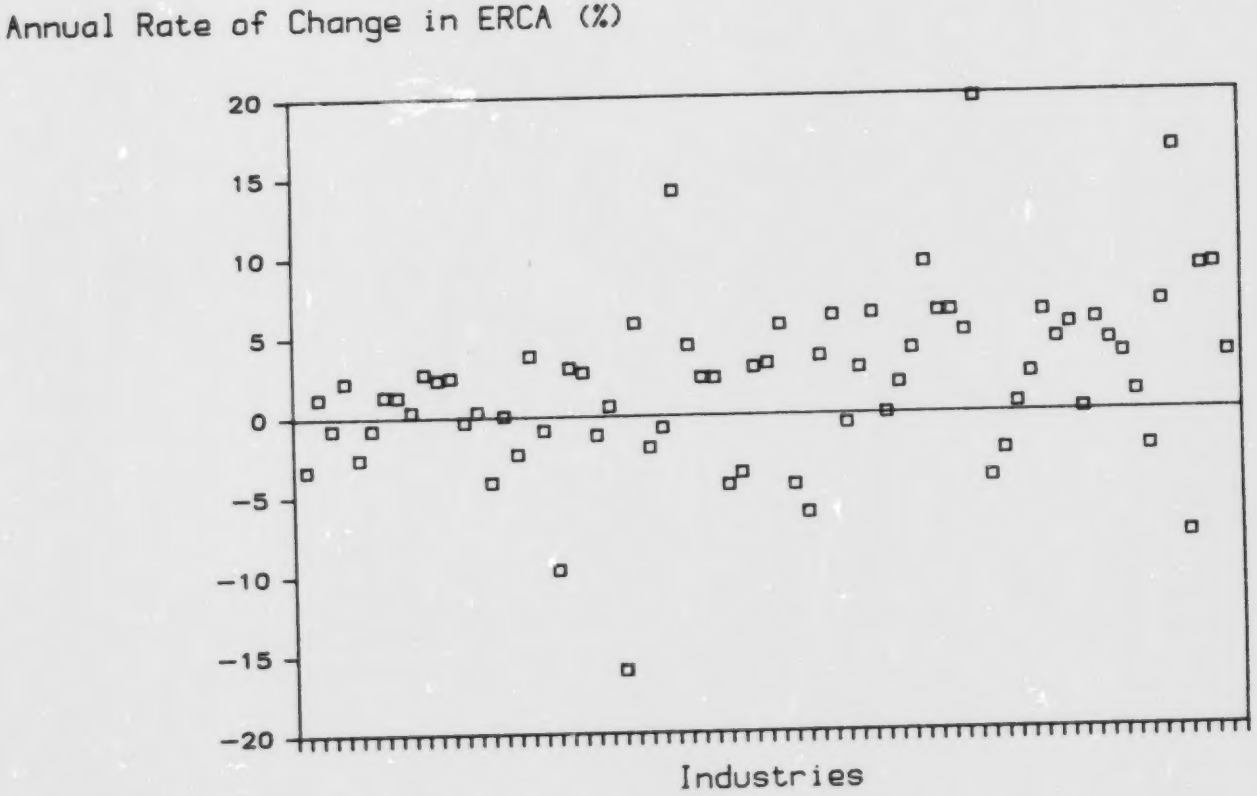


Industries are sorted from left to right in descending order of intercepts of least square line fitted to 1967-81 data

Canada : Intercepts
1967 - 1981

4.3

Changes in the structure of Canada's comparative advantage ranked by starting position

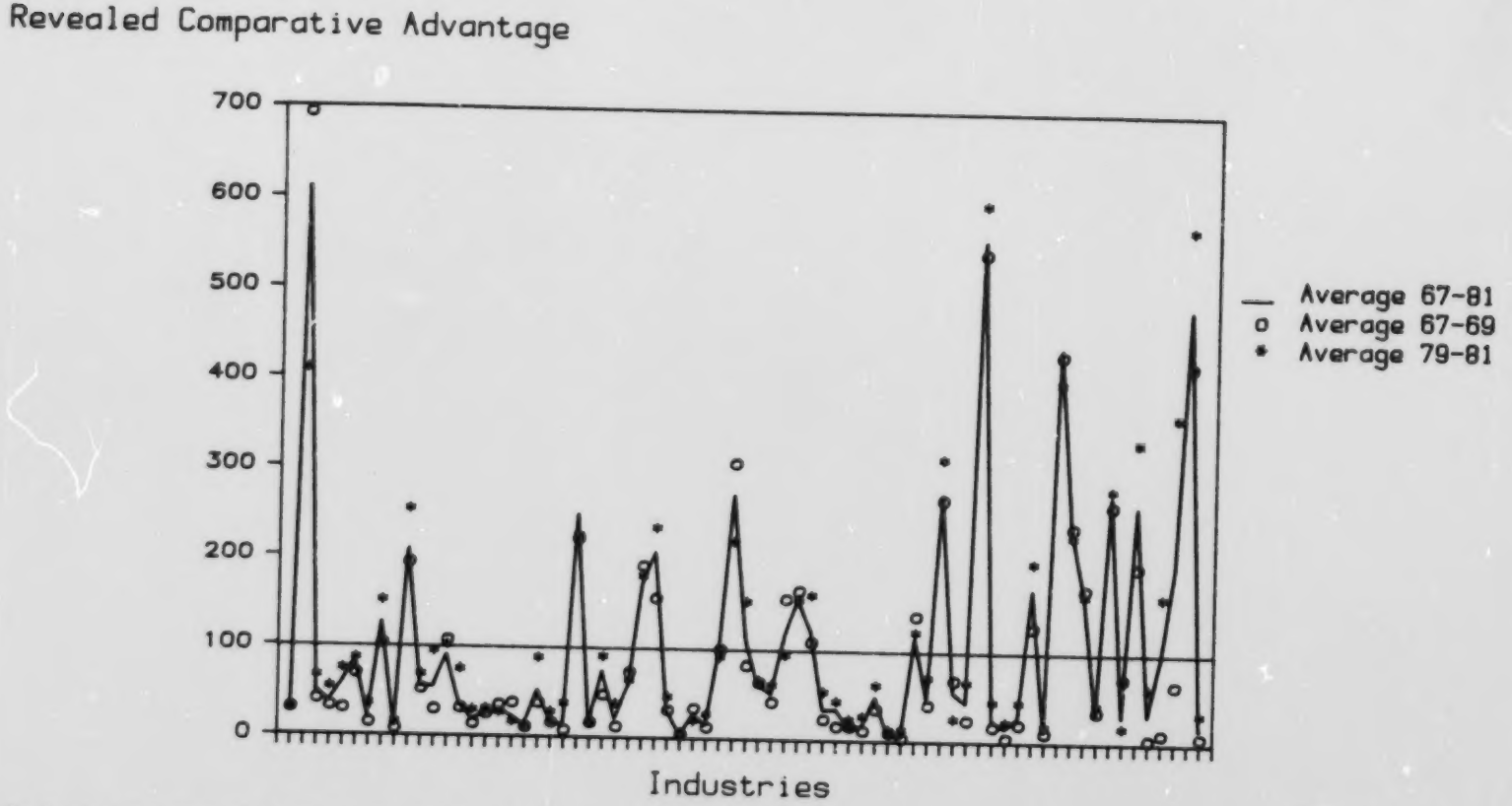


Industries are sorted in
the same order as the previous figure

Canada : Growth in ERCA
1967 - 1981

4.4

The overall pattern of change of comparative advantage of industries in Canada shows little strategic improvement

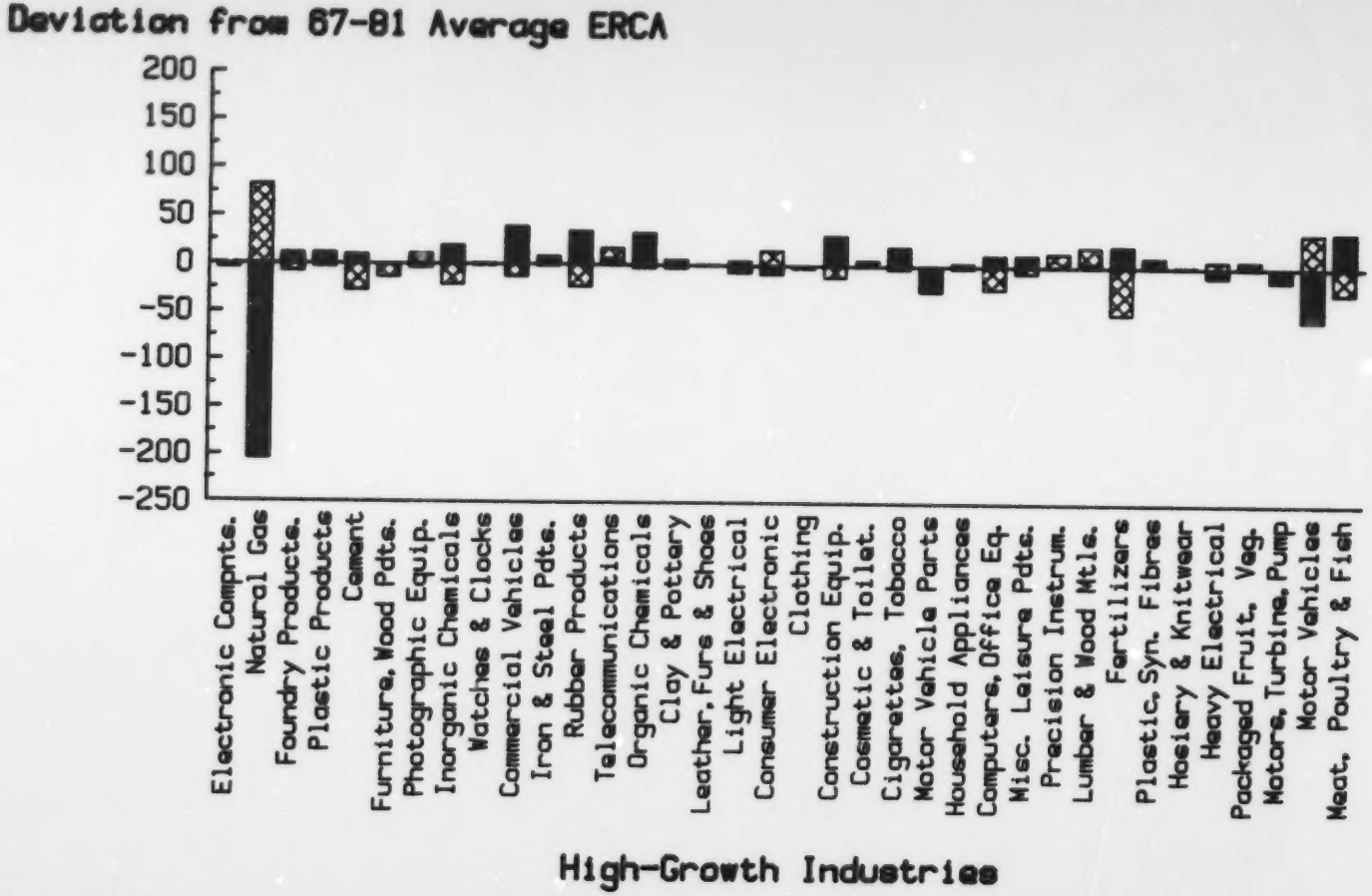


Industries are ranked from left to right in descending order of real growth in total world exports

Canada
1967 - 1981

4.5

The solid bars show deviation of 1979-81 averages from overall 1967-81 averages: hatched bars show deviation of 1967-69 averages

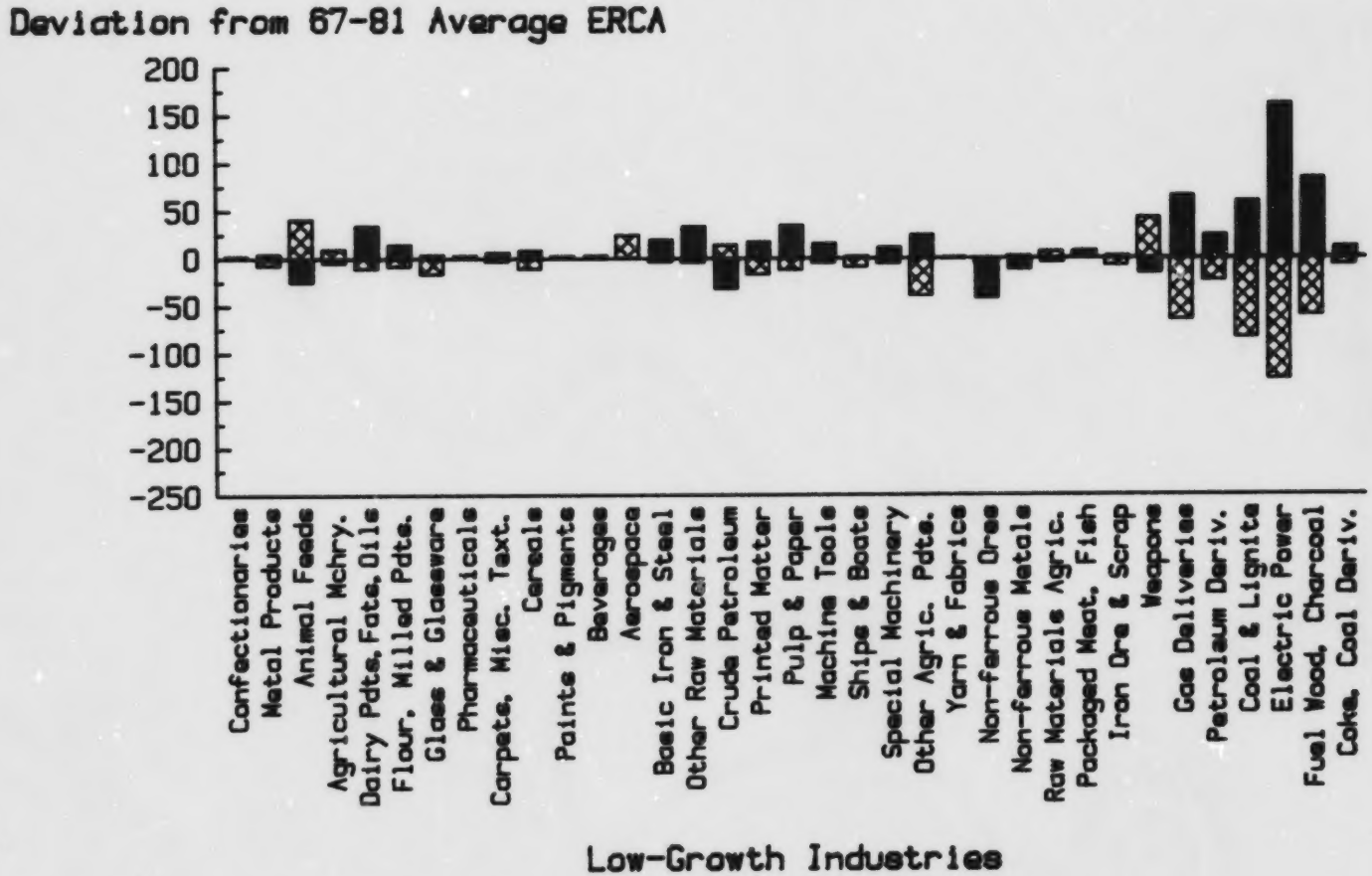


Industries are ranked from left to right in descending order of real growth in world exports

Canada
1967 - 1981

4.6

The solid bars show deviation of 1979-81 averages from overall 1967-81 averages: hatched bars show deviation of 1967-69



Industries are ranked from left to right in descending order of real growth in world exports

Canada
1967 - 1981

Canada's Manufacturing Portfolio

To examine the performance of the manufacturing sector more closely, we turn to Figure 4.7. This shows the relationship between growth in world exports and ERCA in the 1967-71 period and is known as a growth/position matrix. Annual data were averaged for 71 industries over this five-year period (the industries were grouped into the strategic sectors described in Chapter 3). Each circle represents a sector. The location of the circle signifies the weighted average position of the industries within each sector. By examining the relative size and position of these sectors in the growth/position matrix, we can gain an understanding of the overall status of Canada's portfolio of manufacturing industries between 1967 and 1971. Each sector is represented by a circle, whose area is proportional to the total of average annual value added (in 1971 $ billion) of the industries in that sector. A large circle indicates that the sector makes a sizeable contribution to gross domestic product (GDP) and vice versa. The dotted lines represent the average position of all industries, weighted by value added. Portfolios that are weighted towards the top left-hand corner are strategically strong; they indicate a heavy dependence on high growth industries in which Canada has a comparative advantage. Conversely, portfolios heavily weighted towards the bottom right-hand corner indicate a heavy dependence on low growth industries in which Canada has a poor comparative advantage.

Figure 4.7 reveals that Canada had a healthy portfolio of manufacturing industries in the 1967-71 period. Export markets were booming, with a weighted average real growth rate of 10.8 per cent in the markets served by the country. The portfolio is a comparatively strong one. The bottom left-hand quadrant shows industries that usually generate more resources than they consume; hence, they can provide resources to industries in other quadrants to enable them to take advantage of growth opportunities. Only a small proportion of the portfolio suffered from strategic problems.

Let us examine some of these groups more closely. Figure 4.8 provides information on the industries in the Transport Equipment Sector. The auto industry played a significant role in this sector, which included both the motor vehicle and the motor vehicle parts industries. Both the vehicle manufacturing and the spare parts industries did well. This period saw the initial benefits of Canada's Auto Pact with the United States. The pact enabled the Canadian auto industry to establish a high comparative advantage position at a time when worldwide exports of automobiles were growing rapidly.

Figures 4.9 and 4.10 show what transpired in the industries in the Capital-Intensive Sector. These were industries that were in the vanguard of economic development in countries like Japan and the United States. Canada's performance in these industries was mediocre at best. Electronics components was the only industry where growth in value added in Canada exceeded the concomitant growth in world exports. As can be seen from the comparative advantage scores, Canada's export performance in these industries was dismal.

The results of the progress in these sectors through three successive periods — 1967-71, 1971-76 and 1976-81 — appear in Figure 4.11. The "A" bubble for each sector represents the period 1967-71, while the "B" and "C" bubbles cover the following two periods respectively. The same pattern of change can be seen in each sector. The bubbles move down on the vertical scale — i.e., the rate of growth of world exports slows for these industries. There is little or no movement along the horizontal axis. The relative configuration of the portfolio changes little from one period to the other.

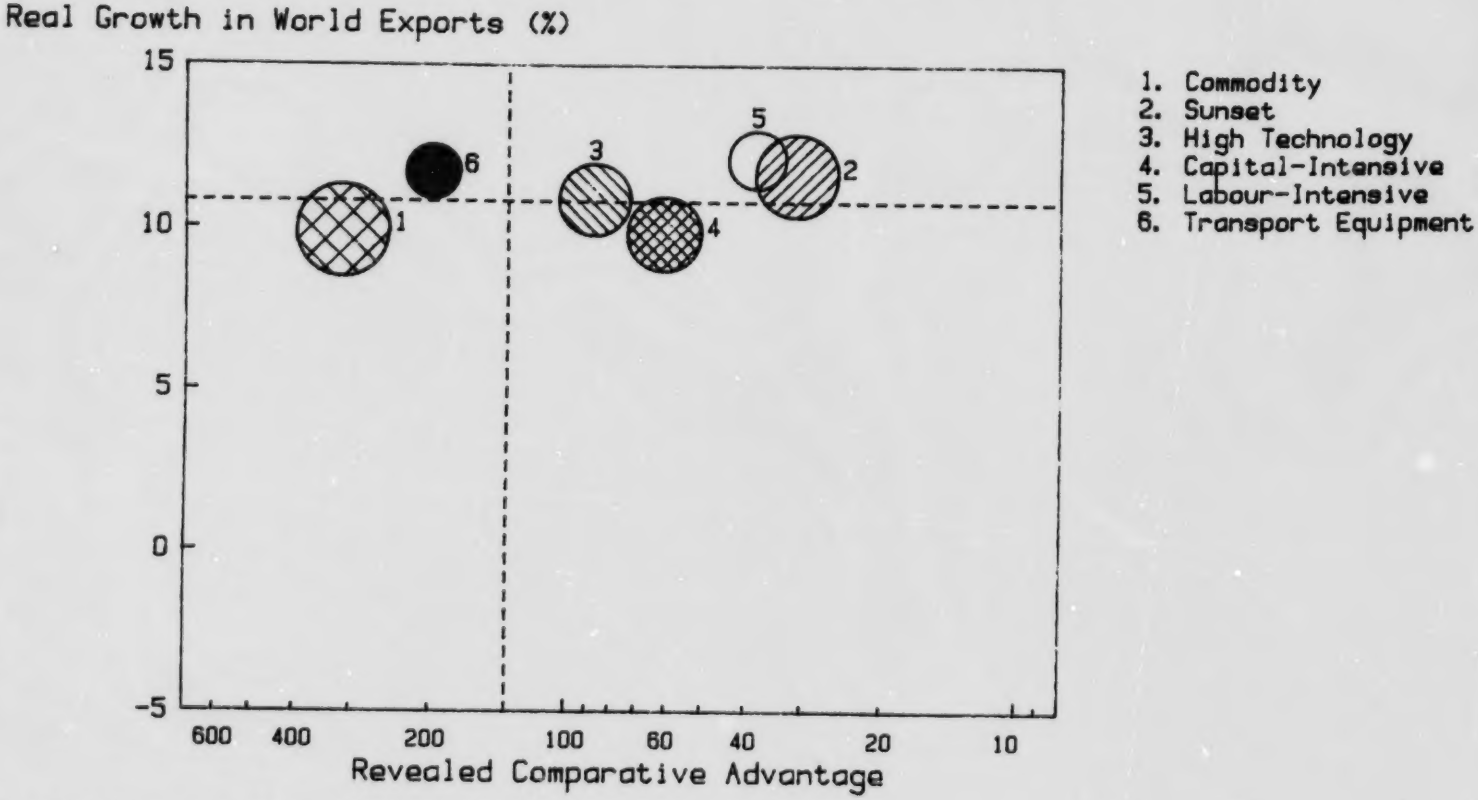
Slowdown in export growth is a general phenomenon that has affected industries in all countries in recent years. That Canadian industries are experiencing the same slowdown is not in itself disturbing. What is alarming is the lack of evidence of a transition response in the Canadian portfolio. Over time, a healthy economy should shift away from slow growth and mature industries and move towards faster growing industries. Further, when overall growth slows down, it becomes more important to have a portfolio weighted towards the top left-hand corner and away from the bottom right-hand corner. An evenly balanced portfolio, such as the one maintained by Canada throughout the three periods, is likely to face considerable competitive difficulties in a period of stagnant growth.

Another way to assess the changes in the Canadian portfolio is to examine the portfolio separately for each subsequent period. This is done in Figures 4.12 and 4.13. Signs of deterioration appeared in the Canadian portfolio between 1971 and 1976. All in all, the picture that emerges is of a relatively healthy economy, but one that is on the verge of serious trouble.

The problems became chronic in the third period, 1976-81. Serious weaknesses were evident in the Canadian portfolio in these years. First, the portfolio is heavily weighted towards low growth industries. The weighted average (by value added) real growth rate was less than 1 per cent per year. This heavy reliance on slow growth industries is really a principal weakness of the manufacturing sector of the Canadian economy. Coupled with this is an increasing support for industries in which the country lacks comparative advantage. These slow growth/low position industries are competing poorly in international markets that are declining in real terms. Such industries can be expected to be uneconomic, and individual firms will have to be heavily subsidized to survive. Therefore, sectors in the bottom right-hand quadrant are a dead weight on the economy, and the growth in the relative size of these sectors is a matter of great concern.

4.7

Booming export markets and a healthy balance in its portfolio were the basis of Canada's strong position in 1967-71



1. Circles proportional to value added ($1971 B)
2. Weighted average world exports grew 10.79%
3. Weighted avg revealed comp. advantage was 135

Canada
1967 - 1971

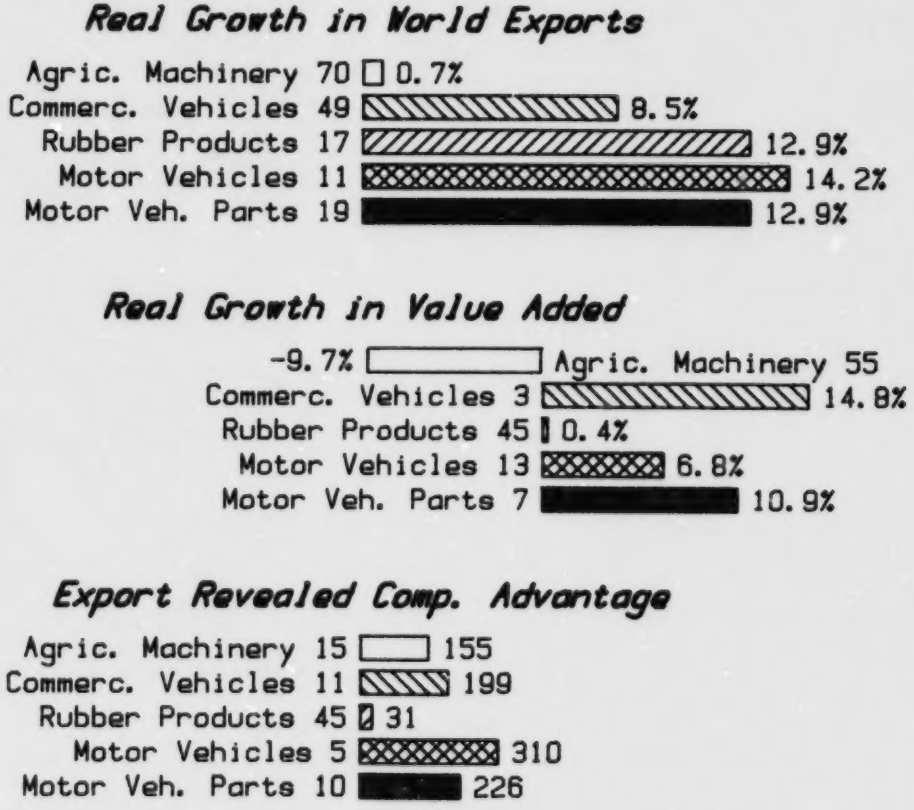
4.8

Growth in value added did not keep pace with growth in world exports in the Transport Equipment sector in 1967 - 71

Weighted average growth in world exports was 11.7%

Weighted average growth in value added was 6.9%

Weighted average export revealed comparative advantage was 198



1. Figures following industry names are overall ranks among 56 manufacturing industries

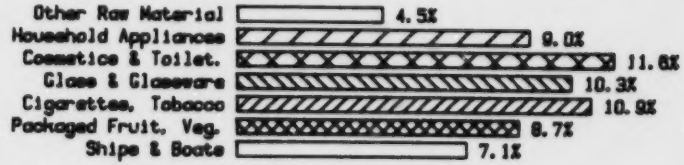
Canada
Transport Equipment Sector
1967 - 1971

4.9

Canada's performance in key growth industries was mediocre at best in the Capital-Intensive Sector

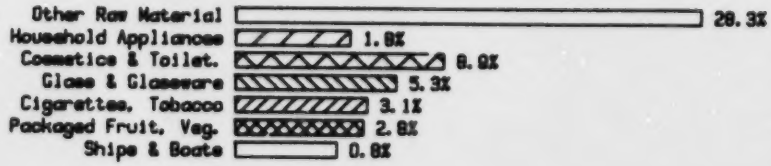
Weighted average growth in world exports was 9.8%

Real Growth in World Exports



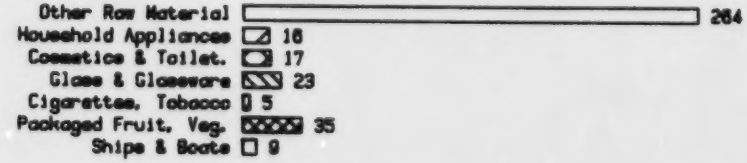
Weighted average growth in value added was 4.4%

Real Growth in Value Added



Weighted average export revealed comparative advantage was 61

Export Revealed Comp. Advantage



Canada 1967 - 1971
Capital-Intensive Sector
... continued

4.10

Canada's performance in key growth industries was mediocre at best in the Capital-Intensive Sector (Cont.)

Real Growth in World Exports

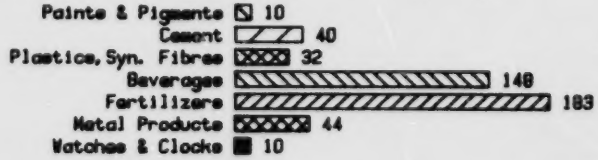
Weighted average growth in world exports was 9.8%

Real Growth in Value Added

Weighted average growth in value added was 4.4%

Export Revealed Comp. Advantage

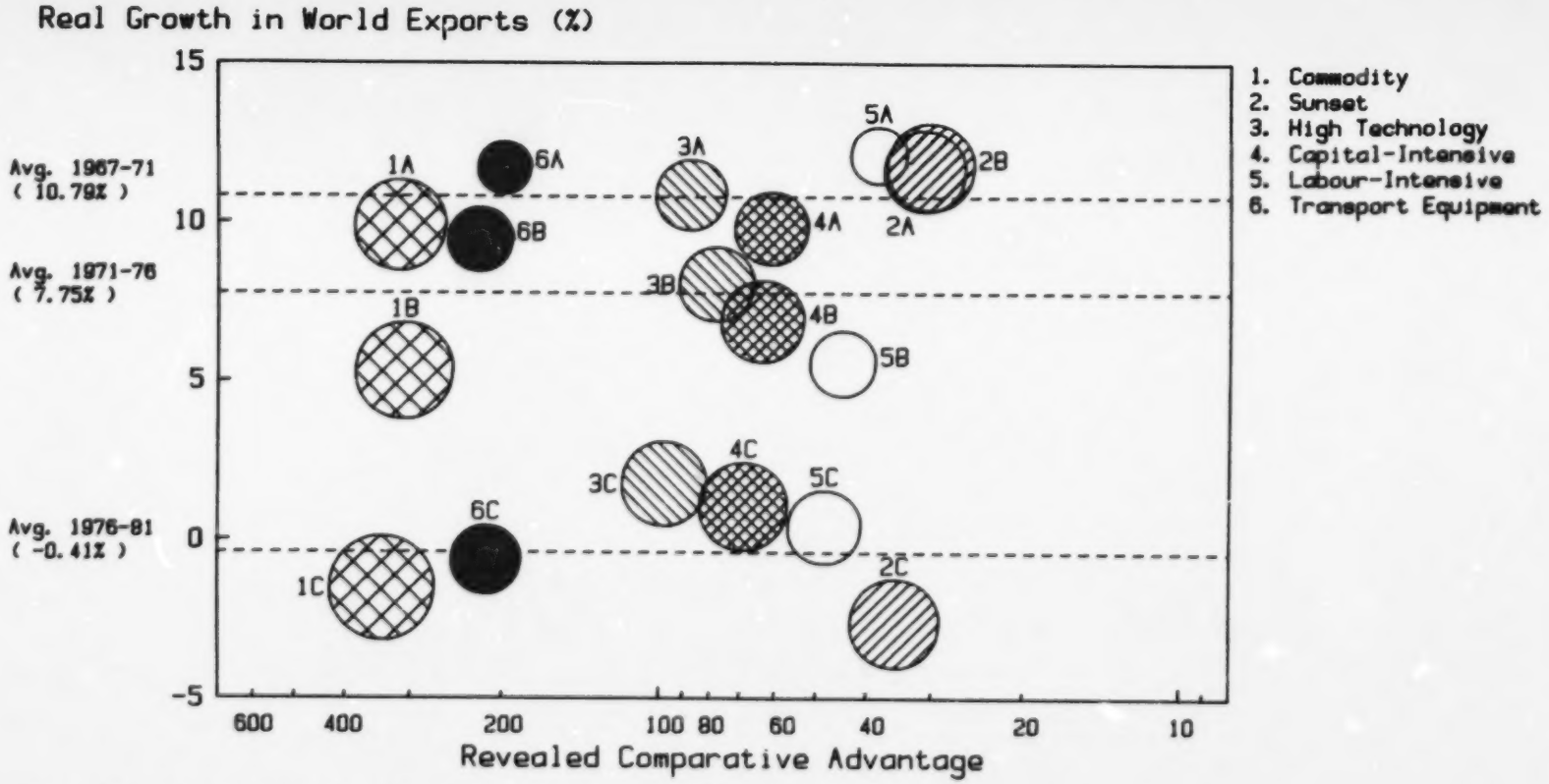
Weighted average export revealed comparative advantage was 61



Canada 1967 - 1971
Capital-Intensive Sector

4.11

The strategic environment of the 6 manufacturing sectors deteriorated with the substantial slowdown in their export markets

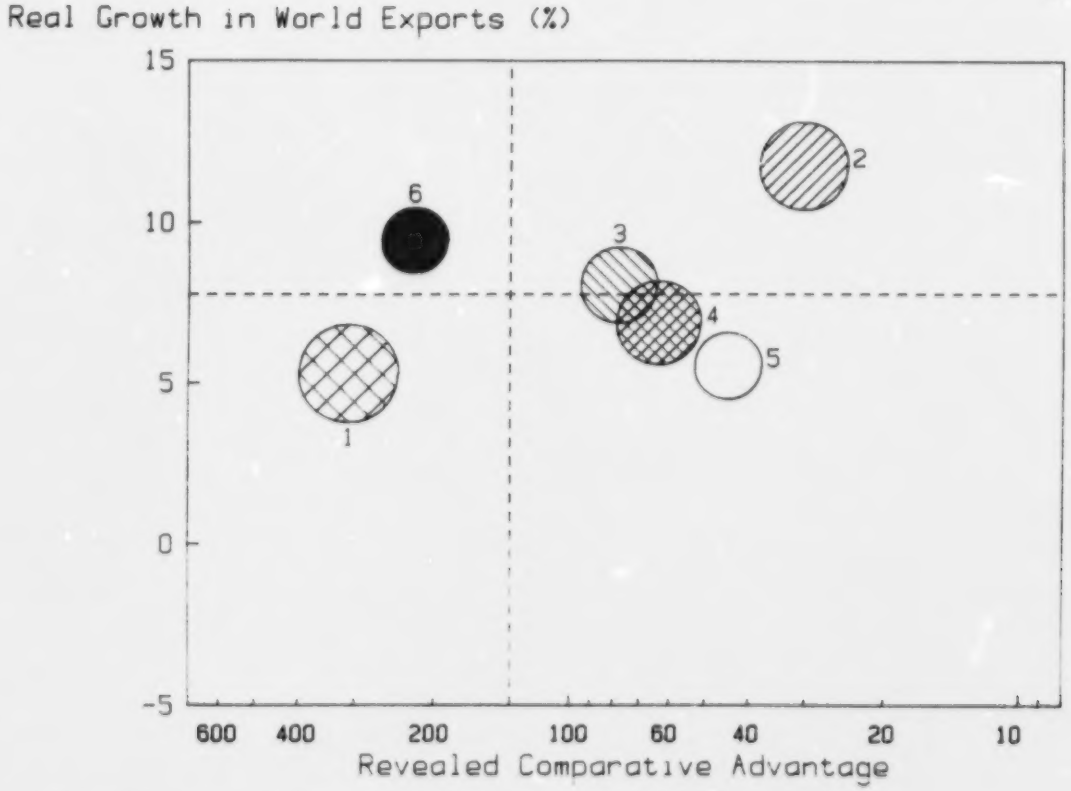


A = Strategic position of each sector in 1967-71
B = Position of the same sector in 1971-76
C = Position of the same sector in 1976-81

Canada : 1967-71, 1971-76 and 1976-81

4.12

Signs of deterioration appeared in the Canadian portfolio during 1971-76



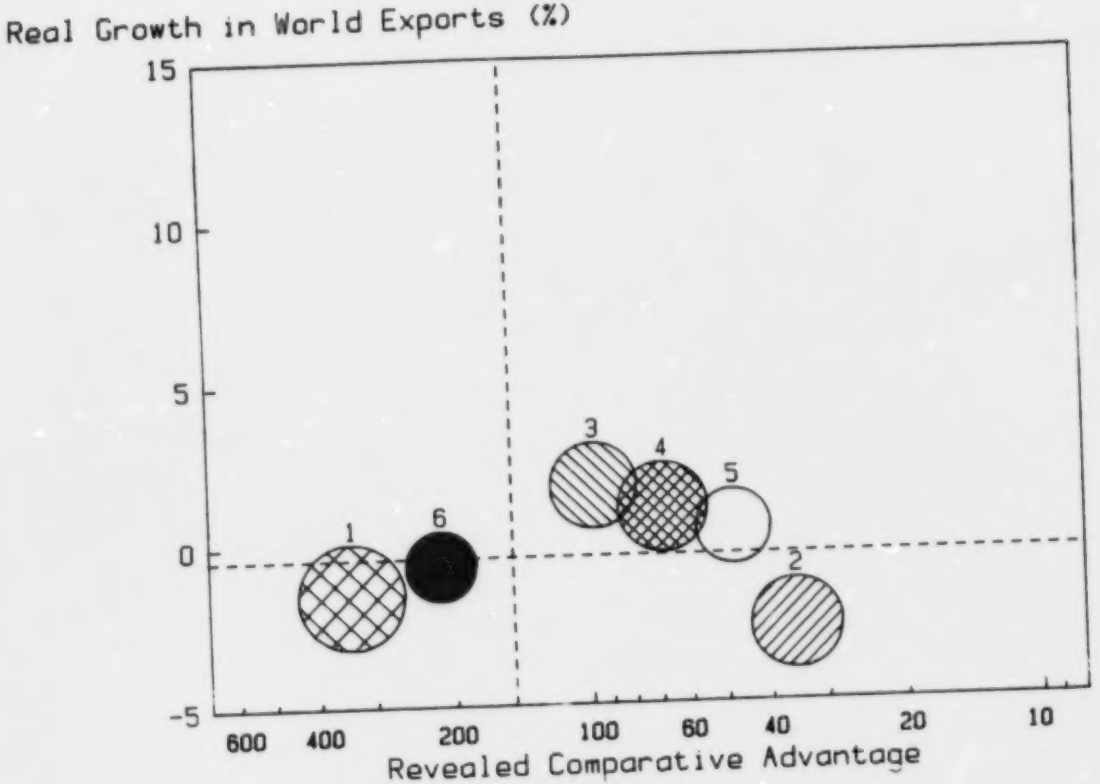
1. Commodity
2. Sunset
3. High Technology
4. Capital-Intensive
5. Labour-Intensive
6. Transport Equipment

1. Circles proportional to value added ($1971 B)
2. Weighted average world exports grew 7.75%
3. Weighted avg revealed comp. advantage was 135

Canada
1971 - 1976

4.13

Serious weakness in the Canadian portfolio became evident in the 1976-81 period



1. Commodity
2. Sunset
3. High Technology
4. Capital-Intensive
5. Labour-Intensive
6. Transport Equipment

1. Circles proportional to value added ($1971 B)
2. Growth in world exports declined to -0.41%
3. Weighted avg revealed comp. advantage was 148

Canada
1976 - 1981

Comparisons with Other Countries

Before drawing this part of the analysis to a close, let us compare the performance of the Canadian portfolio with those of other countries. Figure 4.14 shows the Japanese portfolio in 1966-77. Annual data on 56 manufacturing industries were gathered for this period; the industries were ranked separately from 1 to 56 on the basis of growth in world exports and of their ERCAs for Japan. Group 1 consists of industries that were in the top third of both the export growth and the comparative advantage ranks. Group 2 covered industries in the top third of growth and the middle third of comparative advantage, and so on. The extraordinary strength of the Japanese portfolio is starkly evident. (Note that the circles represent real exports, not value added, as was the case in the previous three Figures for Canada. Figure 4.14 is comparable but not identical to the Figure for Canada.) The Japanese portfolio is heavily weighted towards the top left-hand corner, where a group of 12 high growth/high position industries dominate the entire portfolio. In contrast, the sizes of groups 8 and 9 are relatively small, showing that during this period the Japanese economy relied relatively little on industries in which the country did not have a comparative advantage. The portfolio that emerges is one that is well-suited to a country engaged in a program of rapid economic growth based on exports.

Examining how this portfolio has changed over time (Figures 4.15 and 4.16) reveals some interesting patterns. The groups were separately reconstituted for each period. First, the heavy reliance on a limited number of industries that characterized the portfolio in 1967-71 continued in the 1971-76 and 1976-81 periods. The fundamental structure of the portfolio remained the same; a heavy reliance on export-led economic performance in a small number of key industries in which the country had a comparative advantage. Second, as the rate of growth of world export markets declined, so too did the rate of growth of Japanese exports. In that sense, Japan's performance was similar to Canada's. The difference lies in Japan's greater relative reliance on high growth/high comparative advantage industries. While Canada's portfolio showed some movement towards the bottom right-hand corner, Japan's portfolio remained heavily weighted towards the upper left-hand corner. In short, Japan's portfolio continued to demonstrate considerable strategic strength because it was more concentrated on its "winners."

Membership in the high comparative advantage industries group changed considerably over time, as Figures 4.17 to 4.19 show. Whereas industries such as textiles and chemicals figured prominently in the 1967-71 portfolio, they were not in Group 1 in the 1976-81 period because substantial changes had taken place in the Japanese portfolio. According to MITI officials (Shinohara, 1984), this deliberate transition was based on a decision to support high growth industries that offered opportunities for technical change. In other words, Japan's policy-makers sought to improve the country's comparative position in high growth industries that were technology-intensive.

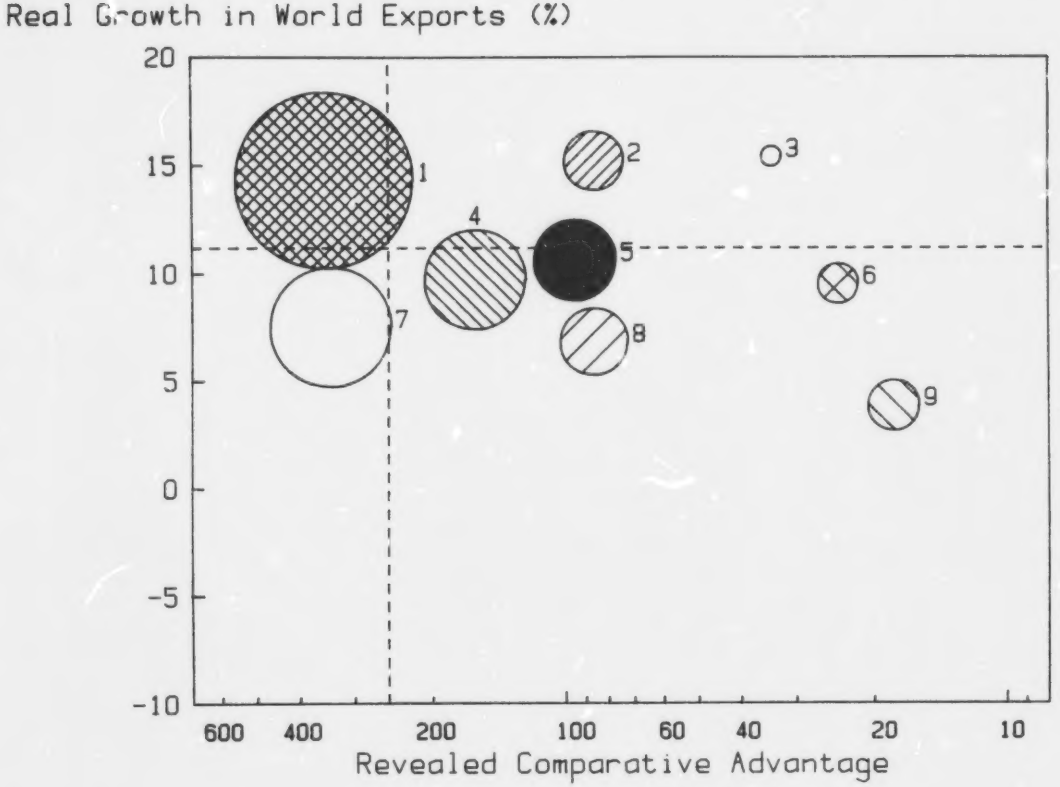
The logic of these choices is simple and compelling. It follows the prescriptions of the Boston Consulting Group's (BCG, 1965) framework for strategic planning at the firm level. This Group held that high growth markets provided the best opportunities for improving one's share of the market. When a firm gains a portion of a fast-growing market, other companies do not suffer an absolute sales decline, and therefore they do not retaliate as vigorously as they would if the market were growing slowly and they suffered a decline in both absolute and relative sales. In practice, some firms are not even aware that their share of the market has declined, because they see their own sales growing at what they regard as a satisfactory rate. A firm that is gaining a greater share in a rapidly growing market will see its cumulative experience increasing at a faster rate than its competitors. In industries with steep experience curves (or as the Japanese say, industries with a high technical progress coefficient), differences in rates at which experience is accumulated translate into substantial unit cost advantages for the leader.

The leader can use its unit cost advantage to price its products more competitively or spend heavily on advertising and sales promotion, which in turn will probably increase its share of the market. Eventually, the cost advantages and higher marketing expenditures of the leader give it such an overwhelming competitive edge that some of its competitors are forced to drop out. This is known as the "shake-out" stage of an industry. After the shake-out, the leader may choose to slow down the pace at which its prices are lowered because further market gains made through aggressive pricing may not be worth the consequent loss of profits. This is the period for the leader to reap the benefits of its aggressive share-building efforts.

It is important to observe that this *virtuous cycle* of share-cost strategies does not work as well in slow growth industries or in industries that are not technology-intensive. When market growth is slow, competitors immediately feel the effects of a firm's attempts to increase its share. They retaliate more vigorously, and this naturally makes it more difficult for the leader to maintain its market gains. In industries that are not subject to steep experience curves, share differentials are much less likely to get translated into significant unit cost advantages for the industry leader.

4.14

Japan's portfolio was heavily weighted towards the top left-hand corner in 1967-71



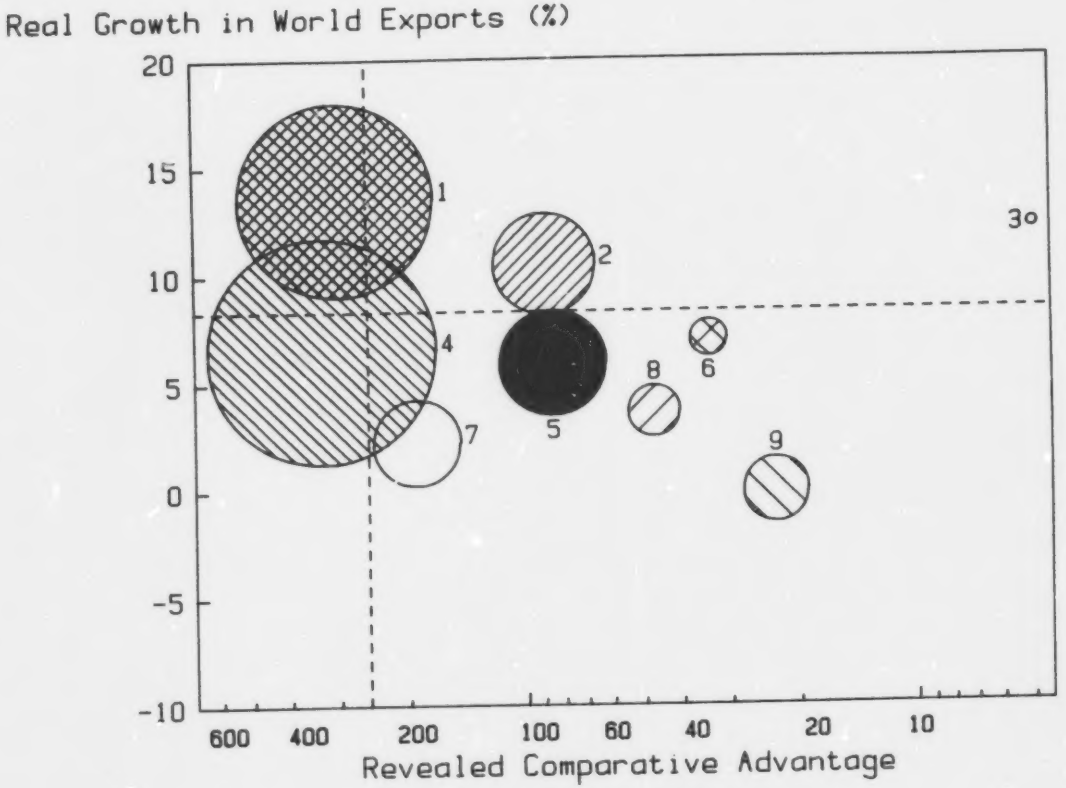
1. Hi-growth, Hi-ERCA
2. Hi-growth, Med-ERCA
3. Hi-growth, Lo-ERCA
4. Med-growth, Hi-ERCA
5. Med-growth, Med-ERCA
6. Med-growth, Lo-ERCA
7. Lo-growth, Hi-ERCA
8. Lo-growth, Med-ERCA
9. Lo-growth, Lo-ERCA

1. Circles proportional to real exports (1971 $)
2. Weighted average world exports grew 11.16%
3. Weighted avg. comparative advantage was 251

Japan
1967 - 1971

4.15

The 1973 OPEC Oil crisis brought about a substantial revision of Japan's portfolio which emerged with considerable strengths



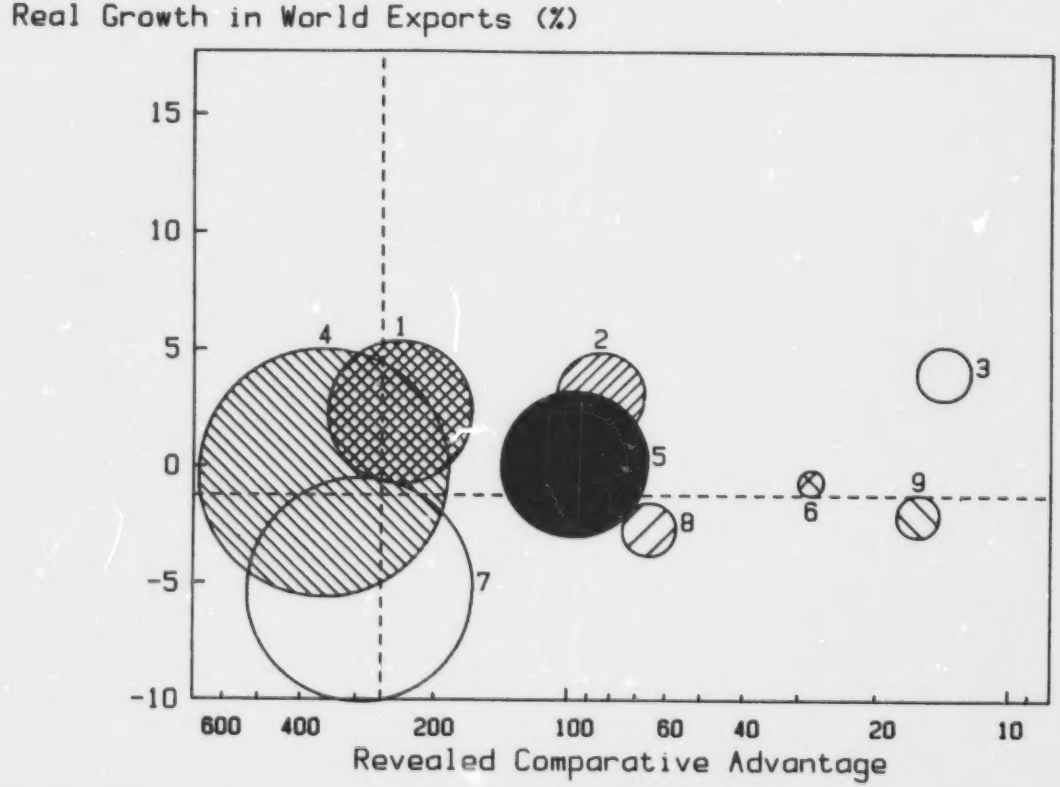
1. Hi-growth, Hi-ERCA
2. Hi-growth, Med-ERCA
3. Hi-growth, Lo-ERCA
4. Med-growth, Hi-ERCA
5. Med-growth, Med-ERCA
6. Med-growth, Lo-ERCA
7. Lo-growth, Hi-ERCA
8. Lo-growth, Med-ERCA
9. Lo-growth, Lo-ERCA

1. Circles proportional to Real Exports (1971 $)
2. Weighted average world exports grew 8.31%
3. Weighted avg. comparative advantage was 252

Japan
1971 - 1976

4.16

Although world export markets experienced a real decline in 76-81, Japan's real exports continued to grow, strengthening its industrial portfolio



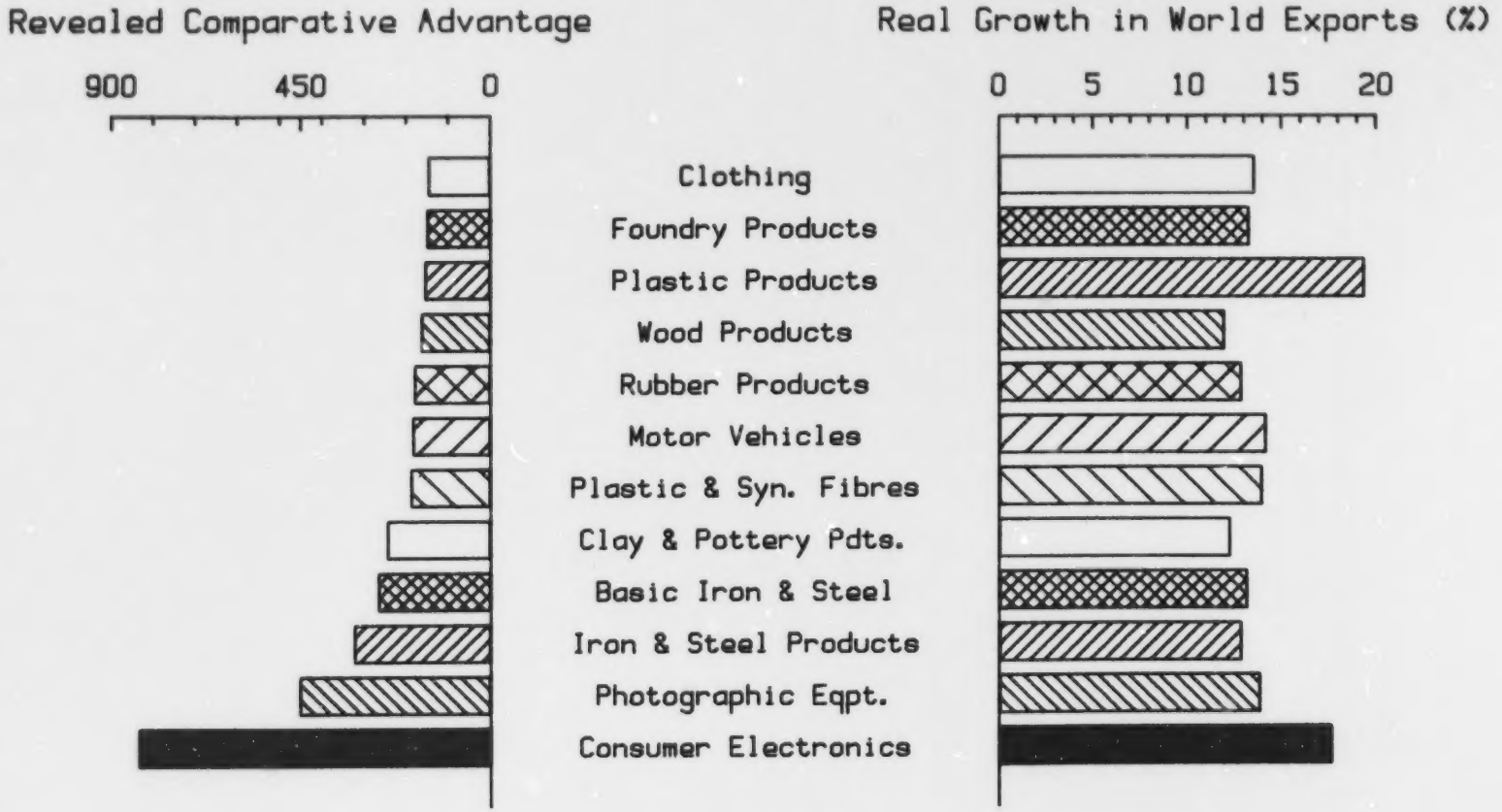
1. Hi-growth, Hi-ERCA
2. Hi-growth, Med-ERCA
3. Hi-growth, Lo-ERCA
4. Med-growth, Hi-ERCA
5. Med-growth, Med-ERCA
6. Med-growth, Lo-ERCA
7. Lo-growth, Hi-ERCA
8. Lo-growth, Med-ERCA
9. Lo-growth, Lo-ERCA

1. Circles proportional to real exports (1971 $)
2. Weighted average world exports grew -1.25%
3. Weighted avg. comparative advantage was 262

Japan
1976 - 1981

4.17

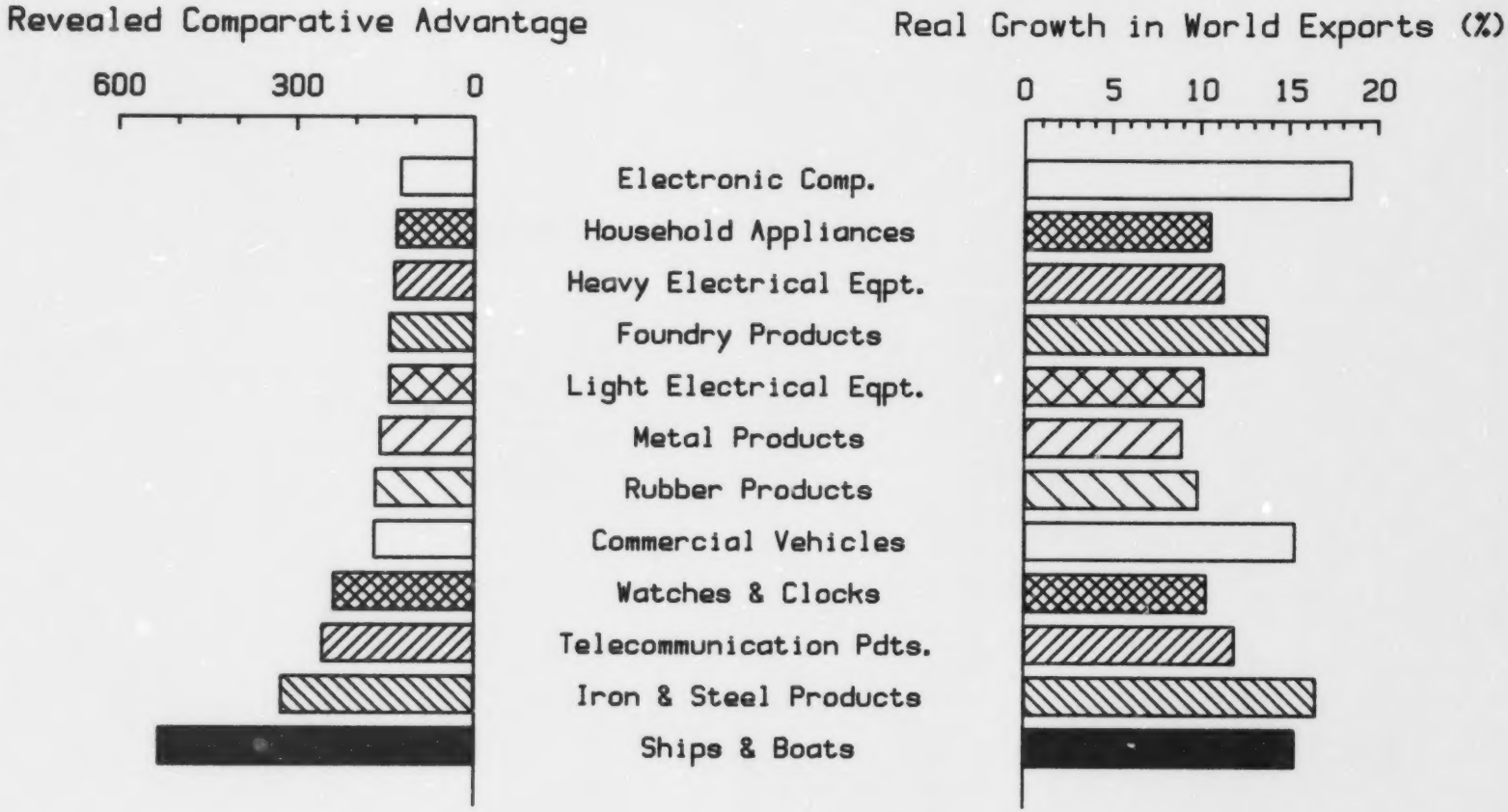
These 12 industries were the basis of strength in the Japanese portfolio in 1967-71



Japan
1967 - 1971

4.18

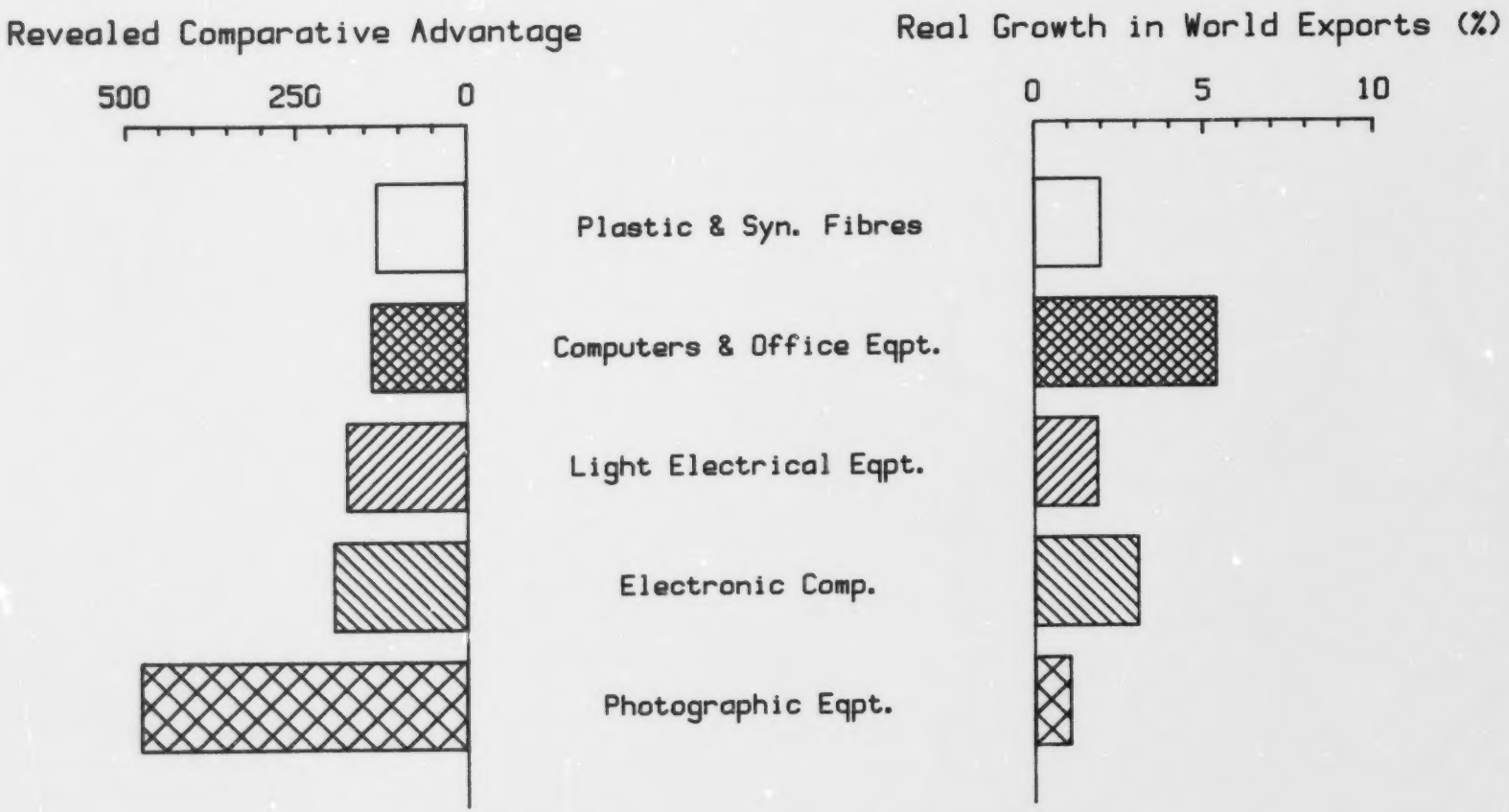
A different group of 12 industries assumed leadership during 1971-76



Japan
1971 - 1976

4.19

High technology, knowledge-intensive industries were the leaders in the Japanese portfolio of 1976-81



Japan
1976 - 1981

Japanese policy-makers decided to apply this competitive strategy framework to their own industrial policy. They deliberately engineered a transition in the structure of comparative advantage by following a set of policies to encourage high growth industries with steep learning curves. Figure 4.20 shows the changes in Japan's comparative advantage. The horizontal axis shows industries ranked on the basis of real growth in world markets, with high growth industries on the left. This figure follows the same pattern as Figure 4.4. It reveals the considerable transition that has occurred in the Japanese portfolio, with an increase in comparative advantage in the high growth industries and a decrease in the low growth industries. The Japanese policy-makers were very pleased with this transition because they were seeking rapid increases in exports to stimulate their economic development effort. However, not all high export growth sectors were equally attractive, nor was Japan able to improve its position in all high growth industries. In fact, in certain fields of high growth, Japan's position declined. Further, in some industries where Japan improved its position, world market growth was slow.

We see the reasons for some of these exceptions when we turn to the other dimension adopted by Japanese policy-makers in choosing particular industrial sectors. Figure 4.21 displays the data from Figure 4.20, ranked by R&D intensity. This ranking is taken from a US Department of Commerce study, which ranked industries in the United States in terms of their ratio of R&D to sales. The top three industries were aircraft and parts, computers and office equipment, and engines and turbines. The ranking is an indication of the relative technological intensity of the industry. Figure 4.21 shows that Japan improved its comparative advantage in technology-intensive industries and lost comparative advantage in low technology industries. The transition pattern that emerges is one of a national industrial portfolio that is becoming more knowledge-intensive, with a strong presence in hi-tech sectors.

The interaction of these two factors is an important aspect of the transition that Japan has undergone. Figure 4.22 graphically demonstrates this interaction.

The vertical axis shows percentage change in comparative advantage by taking the ratio of the 1980-82 average to the overall average from 1967 to 1982. A positive value indicates an increase in comparative advantage, while a negative one shows a similar decline. The industry rankings in Figures 4.20 and 4.21 were used to divide them into groups of high, medium and low growth in markets and high, medium and low technological intensity respectively. These were combined to form the nine groups shown in Figure 4.22. The bar for each group is the average percentage change of the industries in each group, weighted by real exports.

The interaction effect is remarkable in Japan's case. In high technology industries, Japan improved its comparative advantage only in those sectors exhibiting high and medium market growth. In low growth/high technology sectors, it lost comparative advantage. This is consistent with the findings of strategic analyses of industries from a private sector viewpoint (Porter, 1980). Such studies found that it is easier to improve market share in high growth sectors than in low growth sectors. In fact, technology-intensive sectors with low market growth are frequently characterized by intense competition for market share, which can lead to low profitability for all firms in the industry. Japan's avoidance of sectors in the low growth/high technology field is shown by the negative value in Figure 4.22.

Similarly, negative values can be found in low technology sectors, where the basis of competition lies in factors such as low unit labour costs/low wage rates, natural resource endowments, and so on. Since Japan is relatively poorly endowed with these factors, it has reduced its comparative advantage in low technology sectors. It is interesting to note that Japan appears to have reduced its comparative advantage most in those low technology sectors that have exhibited the highest rates of growth in world exports, while it has withdrawn at a slower pace from sectors with low growth rates. Since high growth/low technology sectors are likely to attract more competition from countries with large pools of low cost labour, it was here that Japan was likely to experience the most competitive pressure from developing countries.

The way the Japanese economy adjusted is truly remarkable. It demonstrates what can be achieved by a country that has successfully implemented a development strategy to achieve a very high level of economic growth based on export sales.

How does the Japanese performance compare with the achievements of other countries? Figure 4.23 displays the transition pattern of the United States. This country has experienced a reduction in its revealed comparative advantage in high technology sectors in which it is generally believed to have a comparative advantage. Like Japan, the United States has contracted in low growth/high technology industries. However, its loss of comparative advantage in high growth industries in high technology sectors contrasts sharply with the Japanese pattern.

The largest improvement in the revealed comparative advantage of the United States is in medium growth industries with low technological

intensity. These are mainly industries where the basis of competition is natural resource endowment, in which the United States has a number of significant advantages. Thus, the United States does not appear to be moving towards a comparative advantage portfolio that relies more heavily on knowledge-intensive industries or that builds its competitive position on high rates of market growth. While these patterns do not augur well for the development prospects of the United States, it must be kept in mind that the US is much less dependent on export markets than either Canada or Japan and that at the start of the period of analysis, its position was high in these industries. Therefore, the absolute position of the United States remains strong, even though weaknesses are evident in its pattern of change.

Britain started the period with a substantially weaker portfolio. The pattern of change in that portfolio is unremarkable, as is shown in Figure 4.24, although there is some improvement in low growth/high technology industries. As was mentioned earlier, because these industries are very competitive, it is probable that export growth will be achieved at the expense of profits. It is therefore unlikely that Britain's improvement of its comparative advantage in these industries has led to net economic welfare gains, since the costs of accomplishing these gains are likely to exceed the benefits of superior competitive advantage. The British pattern of adjustment shows little evidence of a strategically directed shift motivated by economic development goals.

The adjustment pattern of the French economy is more pronounced than the British pattern, as Figure 4.25 shows. The French government is much more "hands-on" than its British counterpart, and it has certainly been more active in trying to induce growth in its high technology sectors. However, it does appear to have succeeded in improving France's comparative advantage only in low growth industries, where our data indicates a really substantial change. As in the British case, the other group of French industries that has grown is that with low technological intensity coupled with medium growth rates.

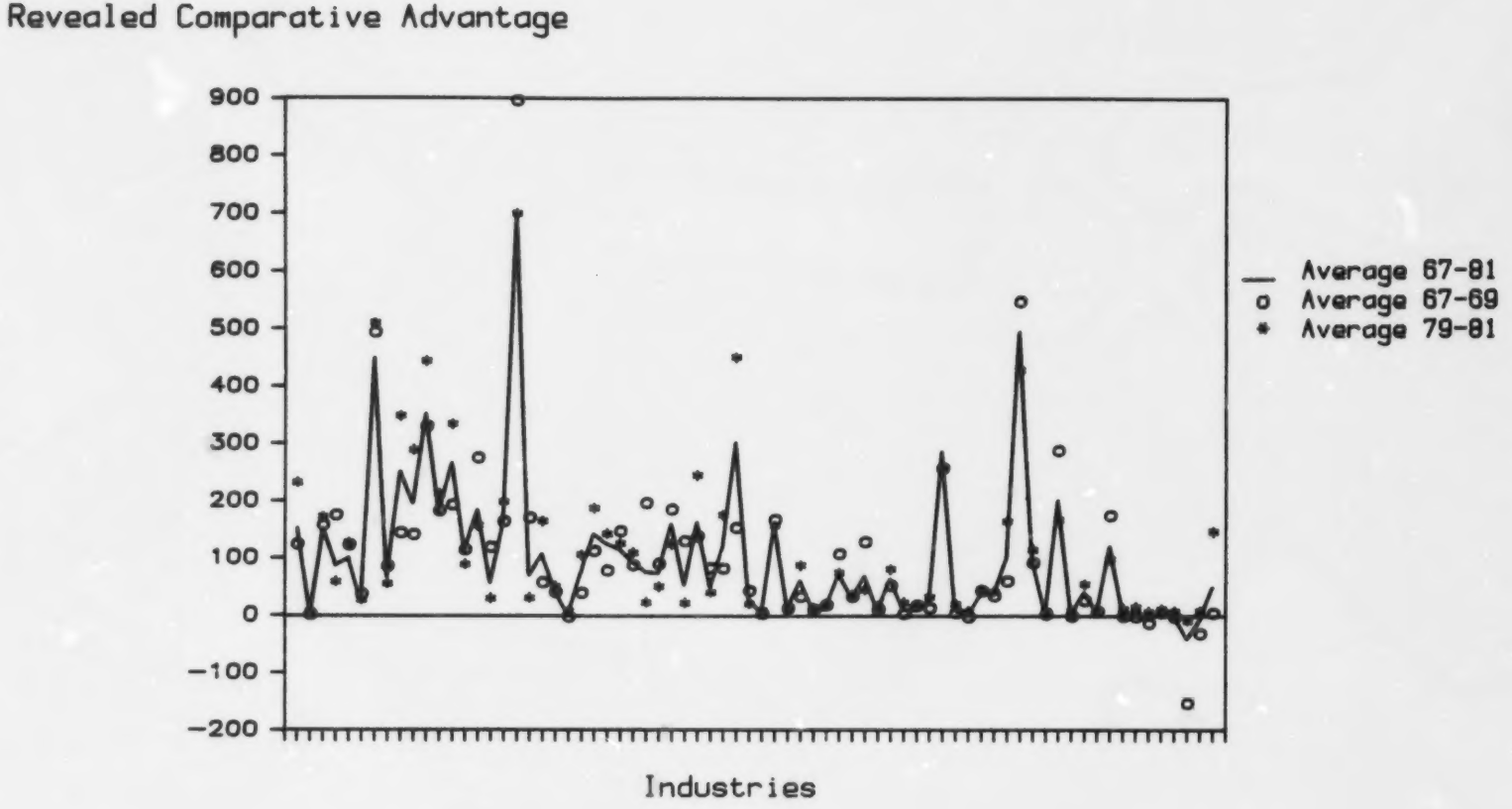
Canadian Adjustment Pattern

Let us now review the adjustment pattern of the Canadian portfolio, shown in Figure 4.26. This portfolio is devoid of strong patterns of adjustment, which is consistent with the data presented in the growth/position matrices identified in Figures 4.7, 4.12 and 4.13. The largest improvements are in high growth/medium technology and low growth/low technology industries. The latter are mainly resource-based industries that experienced a boom following the OPEC oil crisis.

This lack of adjustment does not augur well for Canada. Without changes in the pattern of its comparative advantage, Canada's continued dependence on exports of its resources and of automobiles and parts to the United States means that economic growth will remain unacceptably slow.

4.20

Japan has improved its comparative advantage in high growth industries



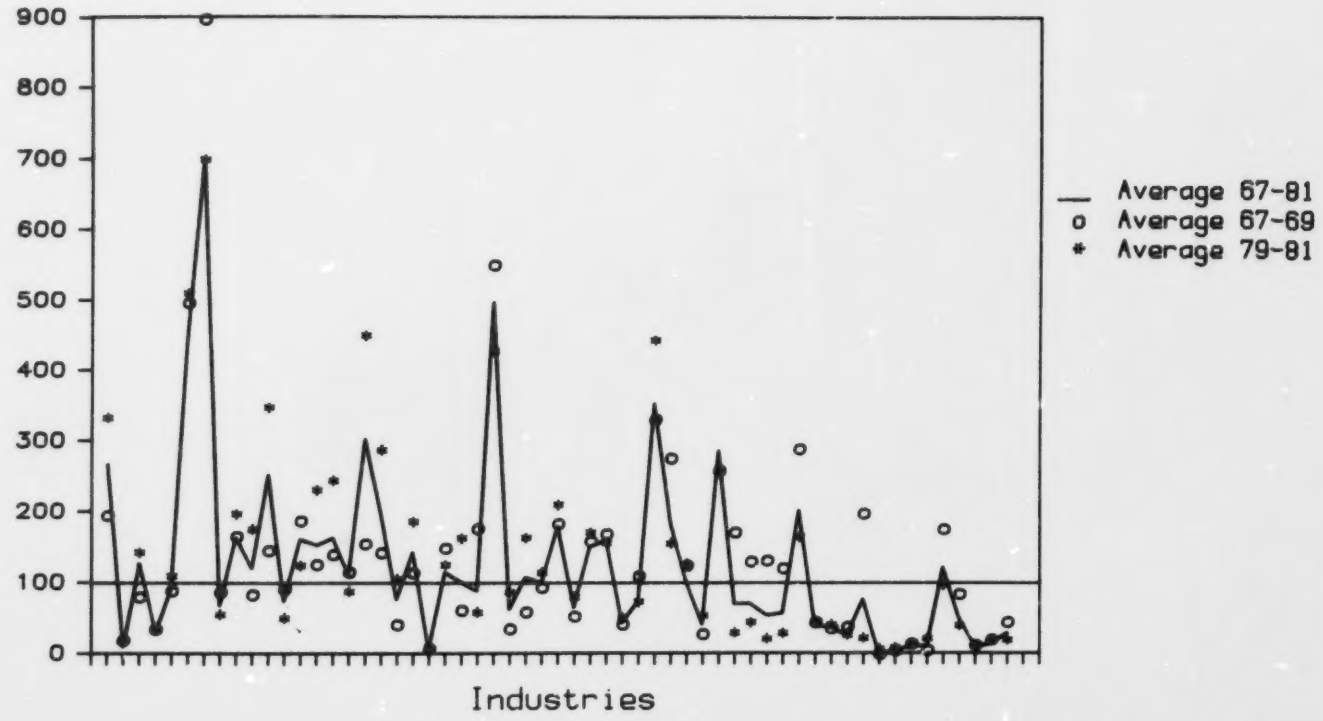
Industries are ranked from left to right in descending order of real growth

Japan
1967 - 1981

4.21

Japan has improved its comparative advantage in high-technology industries and has become less dependent on low-technology industries

Revealed Comparative Advantage

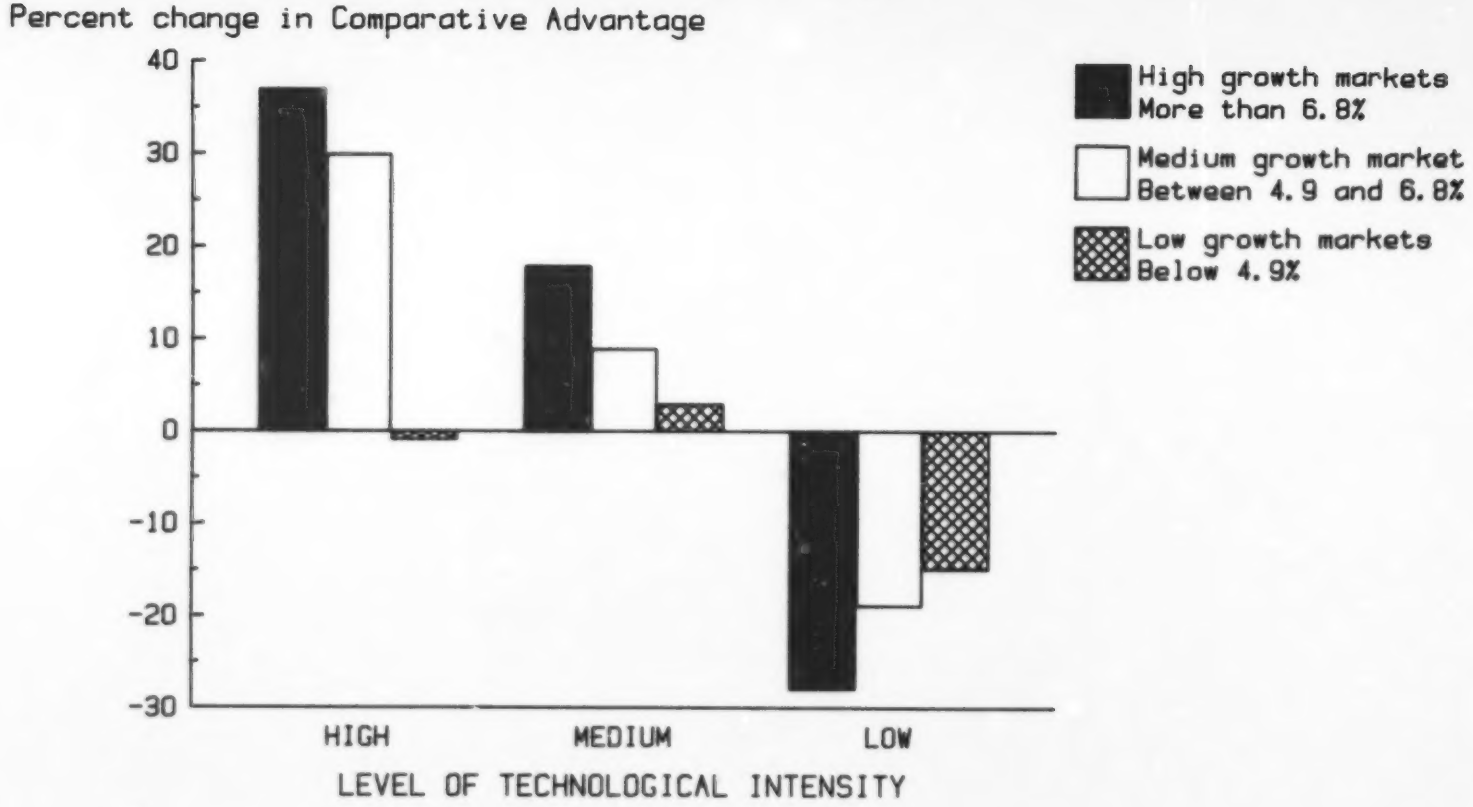


Industries are ranked from left to right in descending order of the ratio of R & D to sales

Japan
1967 - 1981

4.22

Changes in Japan's Comparative Advantage show the influence of the interaction of market growth rates and technological intensity

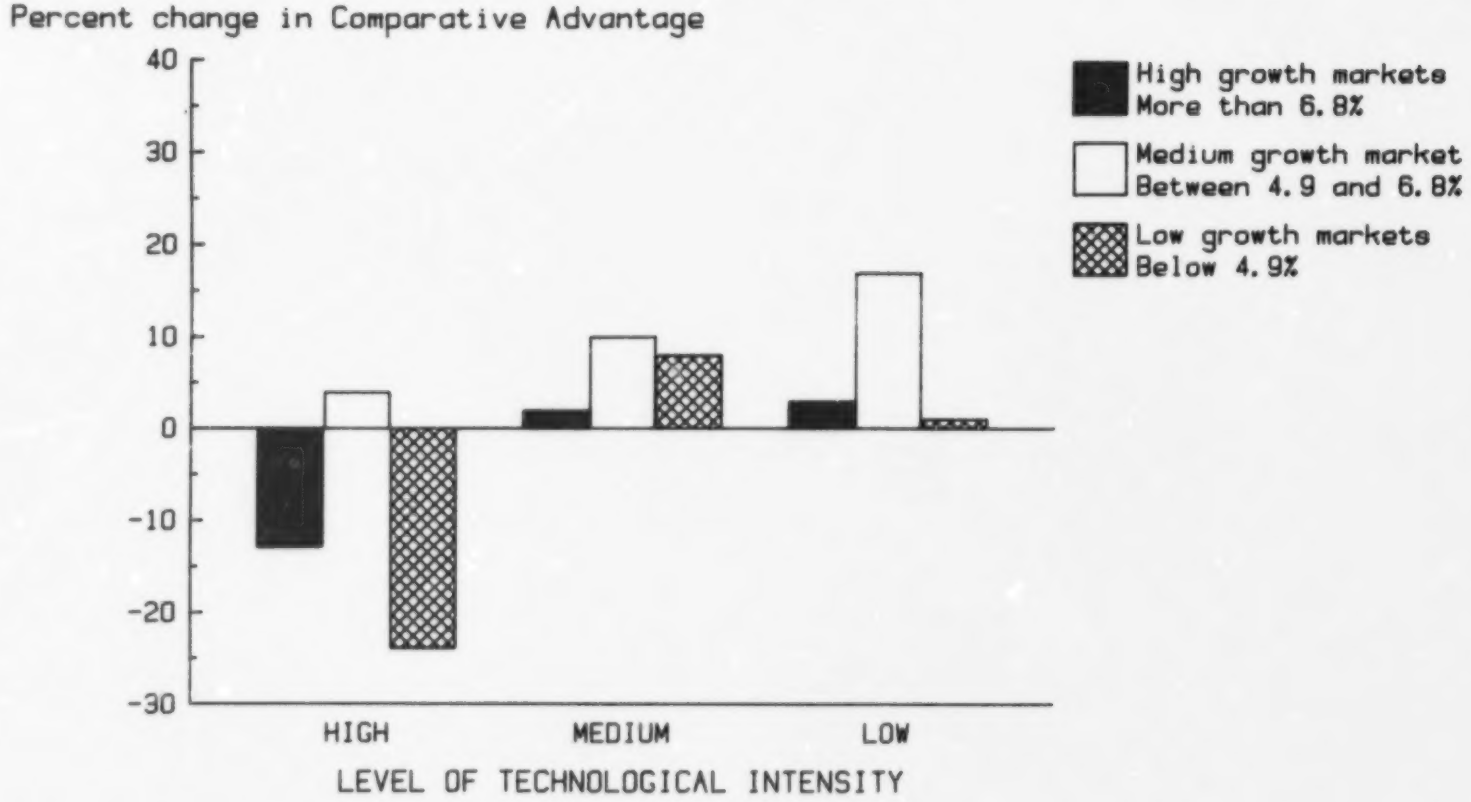


Ranking by level of technology based on
R and D to Sales ratios in the U.S.

Japan
1967 - 1981

4.23

The United States experienced a decline in comparative advantage in high growth/ high technology industries

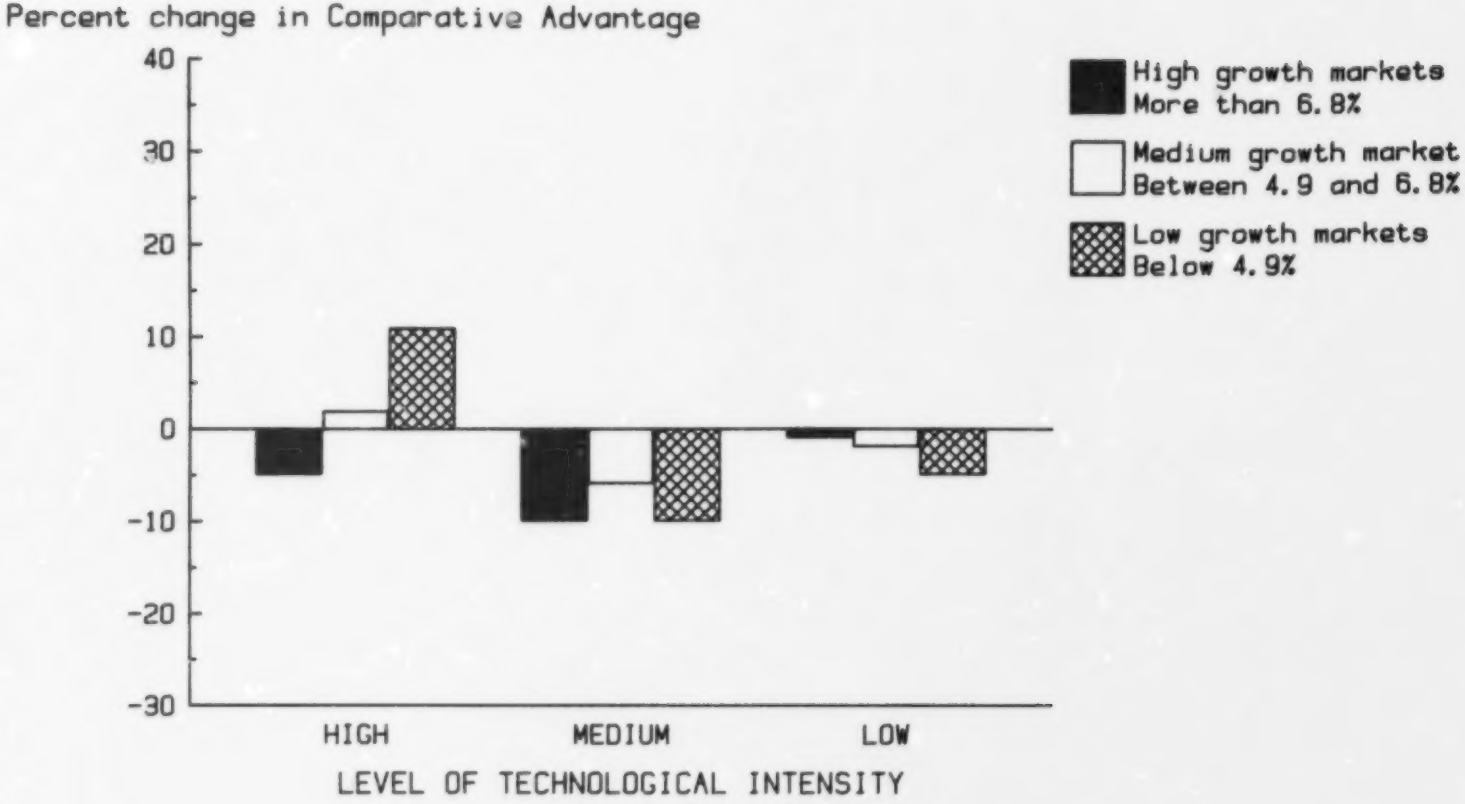


Ranking by level of technology based on
R and D to Sales ratios in the U.S.

U.S.A.
1967 - 1981

4.24

The pattern of change of the portfolio of the United Kingdom is unremarkable

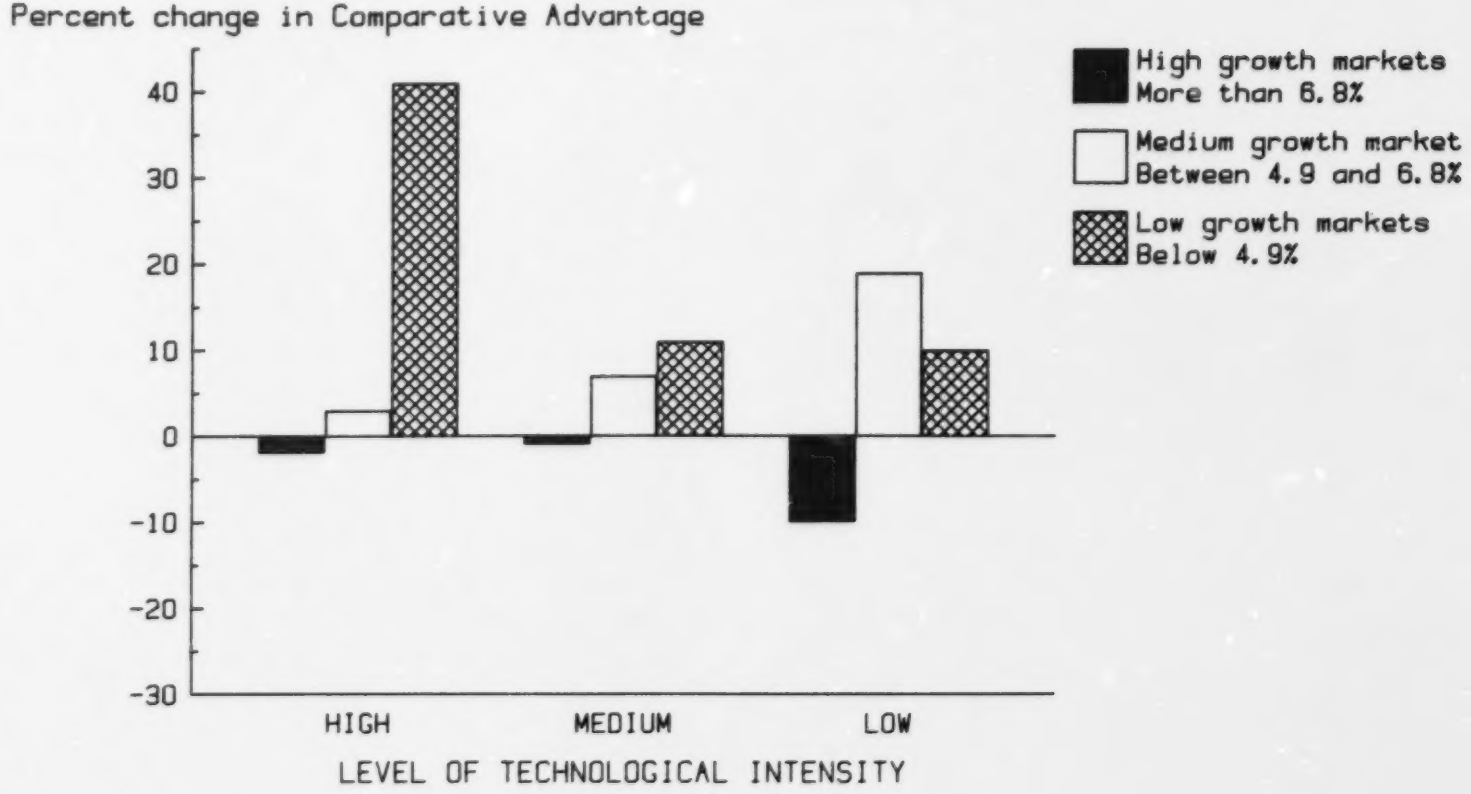


Ranking by level of technology based on
R and D to Sales ratios in the U.S.

U.K.
1967 - 1981

4.25

France improved its comparative advantage in high technology industries with low rates of growth

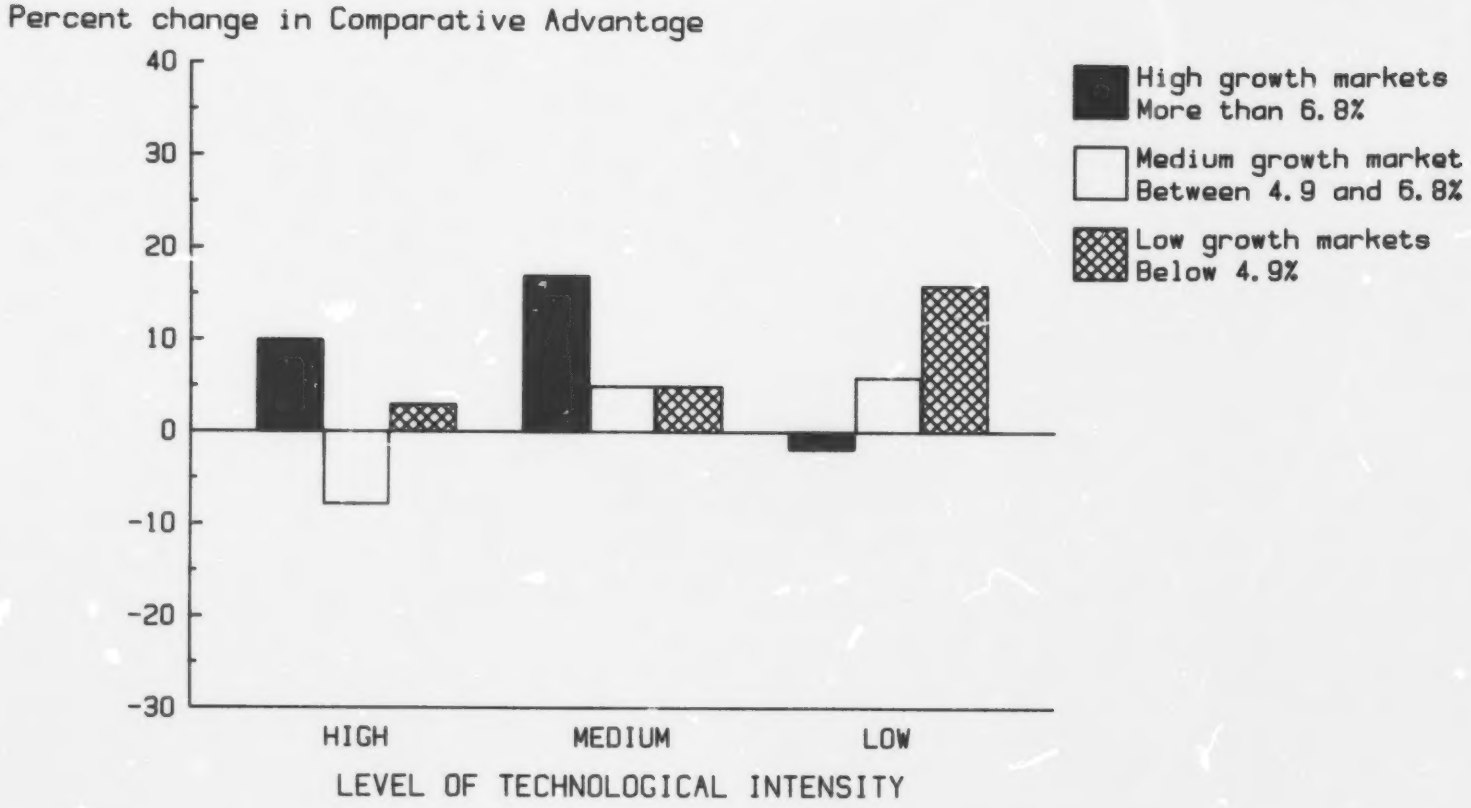


Ranking by level of technology based on
R and D to Sales ratios in the U.S.

France
1967 - 1981

4.26

Canada's industrial portfolio is devoid of strong patterns of adjustment



Ranking by level of technology based on
R and D to Sales ratios in the U.S.

Canada
1967 - 1981

Chapter 5
DIAGNOSING CANADA'S COMPETITIVE ADVANTAGES

Analyzing the comparative advantage of industries in the Canadian portfolio tells only part of the story about their achievements. It shows how well each Canadian industry has performed, compared with other industries in Canada. For some purposes, a more important question concerns the performance of Canadian industries against their competitors. The major tool for studying competitive position is what is known as market share analysis.

The Importance of Market Share at the Firm Level

The most striking common feature of all modern approaches to strategic analysis is the emphasis they place on the importance of market share. This theme was first established in the landmark publication of *Perspectives on Experience* (1968, 1970) by the Boston Consulting Group (BCG). By tracing regularities in the relationships between costs, prices and cumulative production, BCG established the fundamental role of market share as a key element of business strategy.

At about the same time, an internal General Electric study of the determinants of strategy arrived at the same conclusion about the fundamental importance of market share. Since the extent to which its findings were peculiar to General Electric could not be determined, it was decided to broaden the data base. The project was transferred to the Marketing Science Institute, where several faculty members from the Harvard Business School worked on extending the findings. It came to be known as the PIMS program (Profit Impact of Marketing Strategy). General Electric was a principal sponsor of the project, but it was joined by 56 other large US business corporations with a similar interest in discovering the "laws of the marketplace" that governed the relationships between strategy and profits.

The PIMS model discovered that "37 factors in various combinations are significantly related to profitability." However, market share was found to have the strongest positive relationship with profits. This relationship is shown below. As can be seen, return on investment goes up steadily as market share increases. Further, the initial findings revealed that other strategic factors interacted with market share. For example, businesses with both high share and high quality tended to do extremely well. Moreover, high levels of spending on marketing and R&D appeared to hurt profitability when market share was weak, but to bolster profits of high share companies.

Relationship of Market Share to Profitability

Market share (%)	Return on investment (%)
Under 7	9.6
7-14	12.0
14-22	13.5
22-36	17.9
Over 36	30.2

Source: Sidney Schoeffler, Robert D. Buzzell and Donald F. Heany, "Impact of Strategic Planning on Profit Performance," *Harvard Business Review*, March-April, 1974, Exhibit III.

Although the PIMS program has been a major source of empirical analysis of the relationship between market share and profitability, a number of other studies have examined this issue. Chevalier (1972) found strong evidence of this linkage in the cookie, cement and automobile markets in the United States. His work demonstrated the importance of considering both market share and industry structure simultaneously. In other words, it was necessary to consider the ratio between a firm's market share and the share held by the industry leader. Chevalier called this factor the Market Share Index. The market leader had an index of 1.00, and all other firms in an industry had indices lower than one.

The PIMS projects adopted the idea of considering a business unit's market share at the same time as measuring the particular industry's structure. PIMS researchers calculated a variable designated as "Relative Market Share" — the share of the business in question divided by the combined shares of the firm's three largest competitors in the same industry. It was found that this measure predicted profits better than a simple measure of market share.

Market Share Analysis at the Country Level

Country-level market share analysis is based on a different set of principles from those which motivate analysis at the level of the individual firm. The unit of analysis is the industry rather than the firm. The relevant market for which share calculations are made is international trade, as measured by total world exports for the products of any particular industry. A country's share of these exports is used as a measure of the relative ability of that country's industry to compete with industries in other countries.

A country's high market share brings external economies to the firms in that industry. It facilitates the development of technological infrastructure from which these firms can benefit. For example, services such as professional associations and engineering consultants tend to flourish in conjunction with large-scale industrial activity. Government- and industry-sponsored research laboratories and institutes that set standards are all scale-sensitive. Similarly, equipment vendors and providers of ancillary services are more likely to be active in countries with a large market share because of their increased business opportunities.

High market share at the country level also facilitates the development of managerial infrastructure. International marketing intelligence services and strategic management consultants can afford to develop specialized expertise because of the demand for these services. Similarly, educational institutions develop specialized programs when a large job market exists for graduates skilled in that particular discipline.

When an industry has a large share of world trade, its individual firms are likely to be large enough to take advantage of scale economies. Furthermore, normally the bigger the firm, the more able it is to garner the advantages of cumulative experience. And so market share advantages at the industry level will often co-exist with firm-level benefits.

Changes in market share at the industry level are good indicators of change in a country's international competitive position. The principal diagnostic tool used in this chapter is to analyze these changes. It is possible to conceive of a country as having a portfolio of industries, much as a company has a portfolio of businesses. By examining changes in a portfolio's Relative Market Share positions, we can draw important conclusions about the relative competitiveness of its industries.

The measure of market share we have chosen for this analysis is called Relative Market Share. This is Canada's share of world markets for the particular industry divided by the combined share of the three largest exporting countries for that industry other than Canada. This measure captures the interaction between the country's share position and the competitive structure of international trade in that industry. Relative share is therefore a better measure of an industry's competitive strength than market share by itself.

Changes in Canada's Relative Market Share

Canada had a relatively well-balanced portfolio between 1967 and 1971, a period characterized by high growth in world exports. The average rate of growth of world markets in which Canada competed was 10.8 per cent, weighted by Canadian value added in these industries. Figure 5.1 displays the Canadian portfolio for this period. It shows the same six strategic sectors that were described in Chapters 3 and 4.

The weighted average of the Relative Market Share of Canadian industries was 13.25 per cent. A significant portion of the portfolio fell into the top right-hand quadrant. While this portfolio was not heavily weighted towards high share industries, the rapid growth rate of export markets made for a healthy economic climate in Canada.

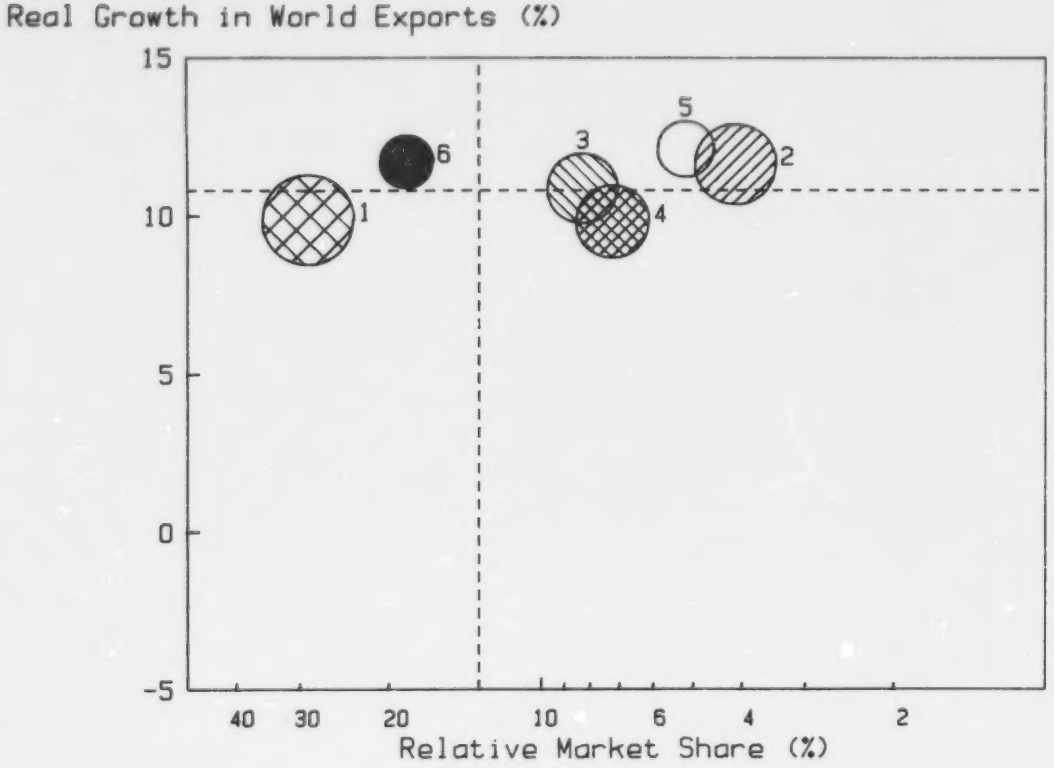
The Canadian portfolio was affected by the slower real growth in world exports that occurred during the 1971-76 period. Figure 5.2 shows that weighted average growth in world exports for the products of Canadian industry declined to 7.8 per cent. Equally important, the Relative Market Share position of Canadian industries deteriorated. Weighted average Relative Market Share between 1967 and 1971 fell to 11.49 per cent from 13.25 per cent. This decline cannot be attributed to an absolute reduction in Canadian exports; it was caused by relative improvements in exports of other countries, despite the reduction of total export growth. Some measure of the magnitude of this deterioration can be taken by comparing Figures 5.1 and 5.2, which are drawn on the same scale. For example, several sectors have moved closer to the bottom-right hand (unfavourable) position.

Further deterioration of Relative Market Share and a substantial slowdown in the growth of world exports occurred in the 1976-81 period, which found Canada with a weakened portfolio (see Figure 5.3). The weighted average Relative Market Share fell to 9.4 per cent, while real growth in world exports was a mere 0.7 per cent. The Canadian portfolio now consists of a combination of relatively strong sectors in declining markets with weak sectors in growing markets.

This analysis of the changes in the Canadian industrial portfolio leads one to conclude that the country's manufacturing industries face a difficult future. There is a heavy reliance on slow (and occasionally negative) growth industries. More importantly, even in these slow growth areas, Relative Market Share has deteriorated, indicating that the country's overall competitive position has weakened. Finally, the relative reduction of the proportion of the portfolio in the high growth/high share area of the matrix is a sign of serious structural weakness. Thus, even in the unlikely event of a recovery of growth rates in world exports to levels near those of earlier periods, Canada's manufacturing industries will not bounce back to their former performance levels because of their weakened competitive position.

5.1

Canada had a relatively well-balanced portfolio during the 1967-71 period which was characterized by high growth in world exports



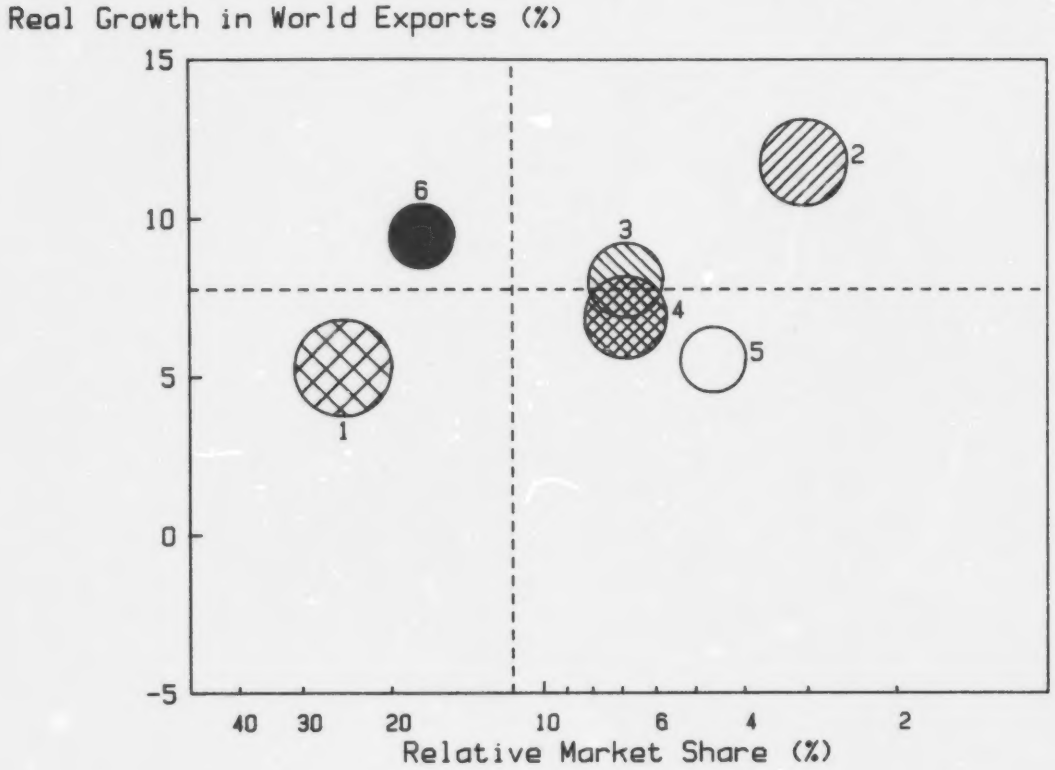
1. Commodity
2. Sunset
3. High Technology
4. Capital-Intensive
5. Labour-Intensive
6. Transport Equipment

1. Circles proportional to value added ($1971 B)
2. Weighted average world exports grew 10.79%
3. Weighted avg relative market share was 13.25%

Canada
1967 - 1971

5.2

The Canadian portfolio was affected by the overall slowdown in growth in world markets and a loss of Relative Market Share



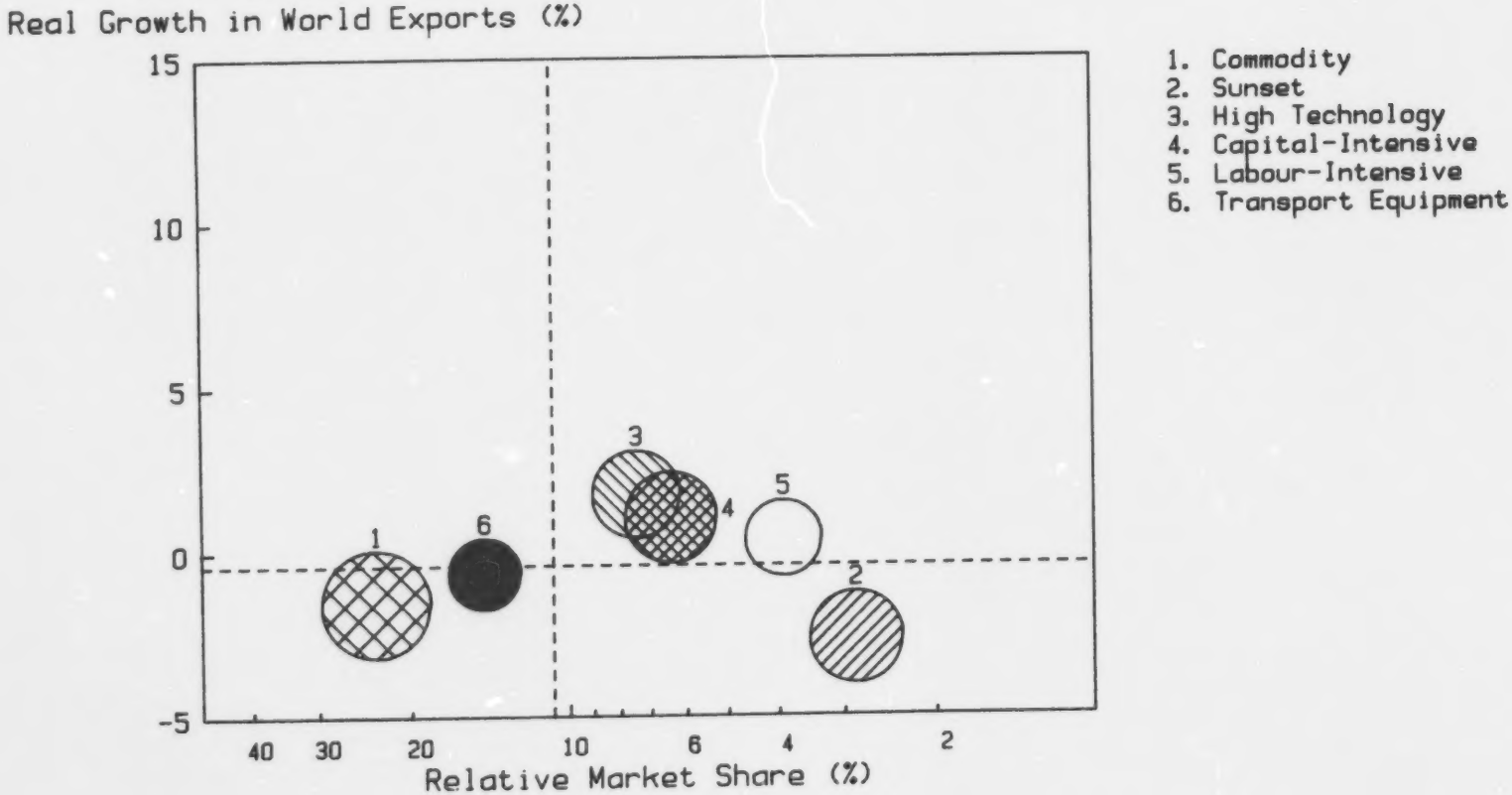
1. Commodity
2. Sunset
3. High Technology
4. Capital-Intensive
5. Labour-Intensive
6. Transport Equipment

1. Circles proportional to value added ($1971 B)
2. Weighted average world exports grew 7.75%
3. Weighted avg relative market share was 11.49%

Canada
1971 - 1976

5.3

Further deterioration in Relative Market Share and a substantial slowdown in growth of world markets have left Canada with a weak portfolio



1. Commodity
2. Sunset
3. High Technology
4. Capital-Intensive
5. Labour-Intensive
6. Transport Equipment

1. Circles proportional to value added ($1971 B)
2. Growth in world exports declined to -0.41%
3. Weighted avg Relative Market Share was 10.71%

Canada
1976 - 1981

Individual Industries

Let us examine how certain key industries performed within these trends. The automobile industry was severely affected by declines in both market growth and Relative Market Share. Figure 5.4 shows the position of Canada's automobile manufacturers. During the 1967-71 period, real annual market growth was a healthy 15 per cent, and Canada's Relative Market Share exceeded 30 per cent. The Canadian industry was a major beneficiary of the 1965 Canada-US Auto Pact, which eventually led to a high level of integration between the two countries at the vehicle's final assembly stage. Integration of engine and body plants was initially lower and is reflected in the slower growth rate in value added.

Relative Market Share declined during 1971-76. The North American auto industry lost ground to cars imported from Japan and Europe, which satisfied the surge in demand for higher quality, fuel-efficient automobiles after the 1973-74 OPEC oil crisis. During the period, the product mix of the American automakers who dominate the Canadian industry did not cater to these emerging market demands. Canadian value added grew despite these market setbacks when the second wave of integration under the Auto Pact took place; cars assembled in Canada began to gain a reputation for higher quality than those coming from the US plants.

World exports of automobiles declined in real terms during 1976-81, mainly because of the economic recession in the developed countries. Simultaneously, Canadian automakers lost Relative Market Share, mainly to the Japanese. These two factors had a substantial impact on growth in valued added. This once-strong industry found itself in serious difficulties; production and employment declined severely. While a significant recovery occurred between 1981 and 1983, the industry is far from re-establishing its former competitive position. The automobile industry's recovery is due largely to restrictions on Japanese car exports to the United States and Canada. This respite from Japanese competition allowed North American automakers to regain some of their lost market share. More importantly, it enabled them to raise auto prices, which had been held down because of competitive pressures from the more cost-efficient Japanese. The consequence of all this is that the profits of North American automakers have soared.

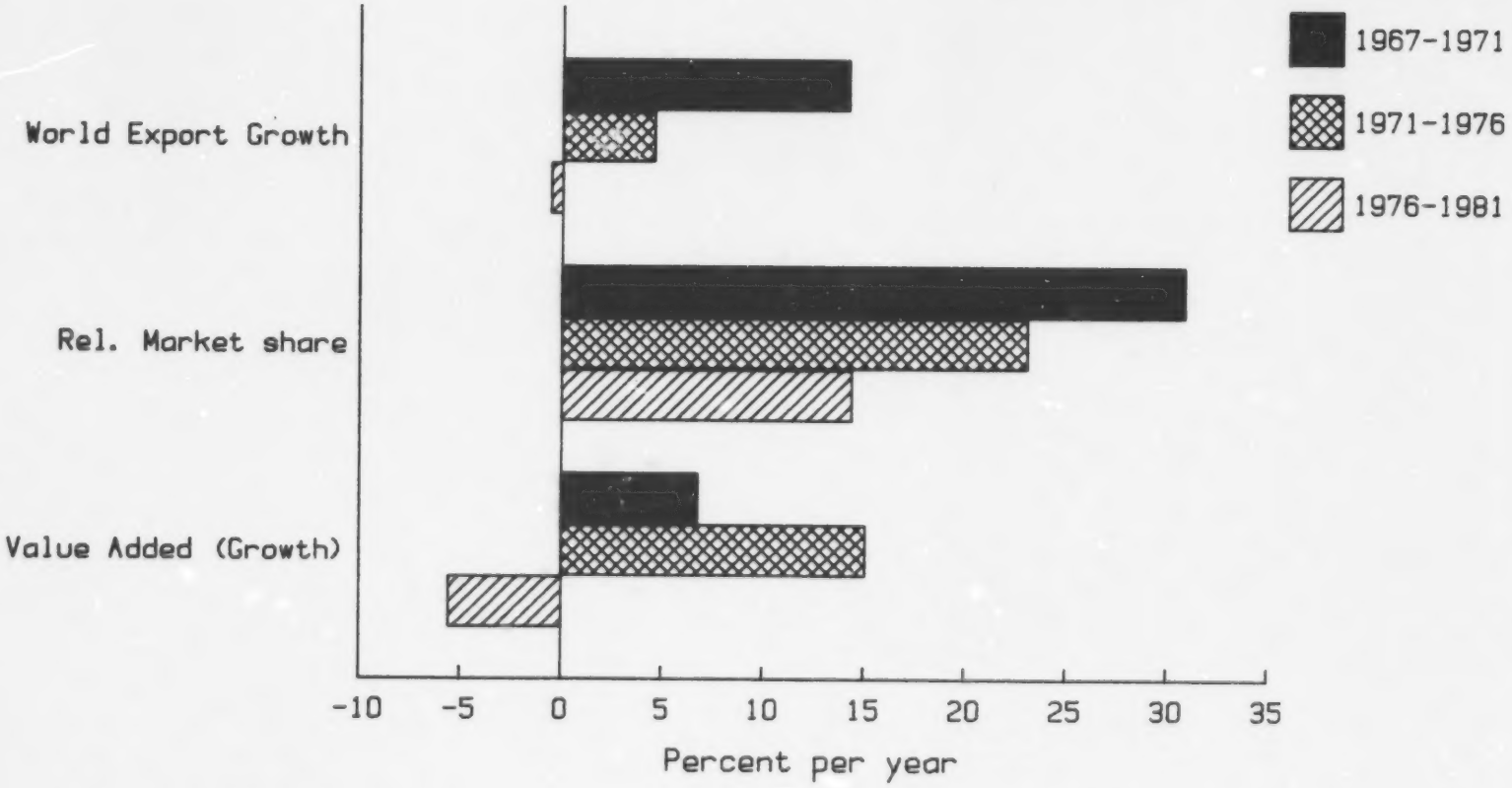
Yet for all this, the fragility of the recovery in automobile production becomes clear if we acknowledge that it is due solely to the curbs on the importation of Japanese cars. If these curbs were lifted, sales of Japanese cars would increase rapidly. There is widespread pent-up public demand for these cars because dealers are unable to obtain supplies. Furthermore, because their export rules apply to the numbers of automobiles shipped, the Japanese have tended to export more expensive cars. If the export curbs are removed, lower priced cars will be shipped as well, bringing severe price pressure to bear on North American automakers, who will be forced into price concessions. Market share losses, combined with a decline in prices, may well lead to a repetition of the problems faced by the industry during 1976-81.

The motor vehicle component industry suffered the same problems as the automobile assemblers (see Figure 5.5). Relative Market Share has remained high because components are not traded to the same extent as automobiles. Japanese and European automakers rely very heavily on domestic supply sources for components. Canada and the United States are the only two countries that import vehicle components on a large scale. This phenomenon is another outcome of the Auto Pact, which encouraged the rationalization of component manufacture. Such integration brings both benefits and dangers. The latter arise from the spread of volume downturns in the vehicle assembly industry to businesses in the upstream part of the industry. In addition, during volume downturns there is a tendency to favour in-house or domestic suppliers and cut back on purchases from foreign suppliers. This was evident in the decline of value added in the 1976-81 period, when the vehicle components industry suffered a larger decline than the automobile assemblers.

A different pattern of problems can be seen in the telecommunications equipment industry, which has experienced very healthy growth in Canada. Firms like Northern Telecom have demonstrated that Canadian businesses can do well in the high technology sector. Northern Telecom's development of state-of-the-art telephone equipment for its sister firm, Bell Canada, gave rise to a product line that has been successfully sold in export markets. However, Figure 5.6 shows that Canada's telecommunications equipment industry has been gradually losing its share of world exports. Even though the industry's sales have grown quite rapidly, those in other countries have grown even faster, and exports from the United States and Japan, in particular, have risen sharply. Unless the deteriorating competitive position is reversed, market share losses will mean that the Canadian industry will meet stiff price competition from other countries, whose costs will decline faster than Canadian costs. Part of the problem is that production destined for US markets has been moved from Canadian locations to sites in the United States. Such moves may make sense at the firm level, but they represent a net loss of manufacturing activity in Canada and an eventual weakening of the industry's infrastructure.

5.4

The automobile industry has been severely affected by declines in both market growth and market share

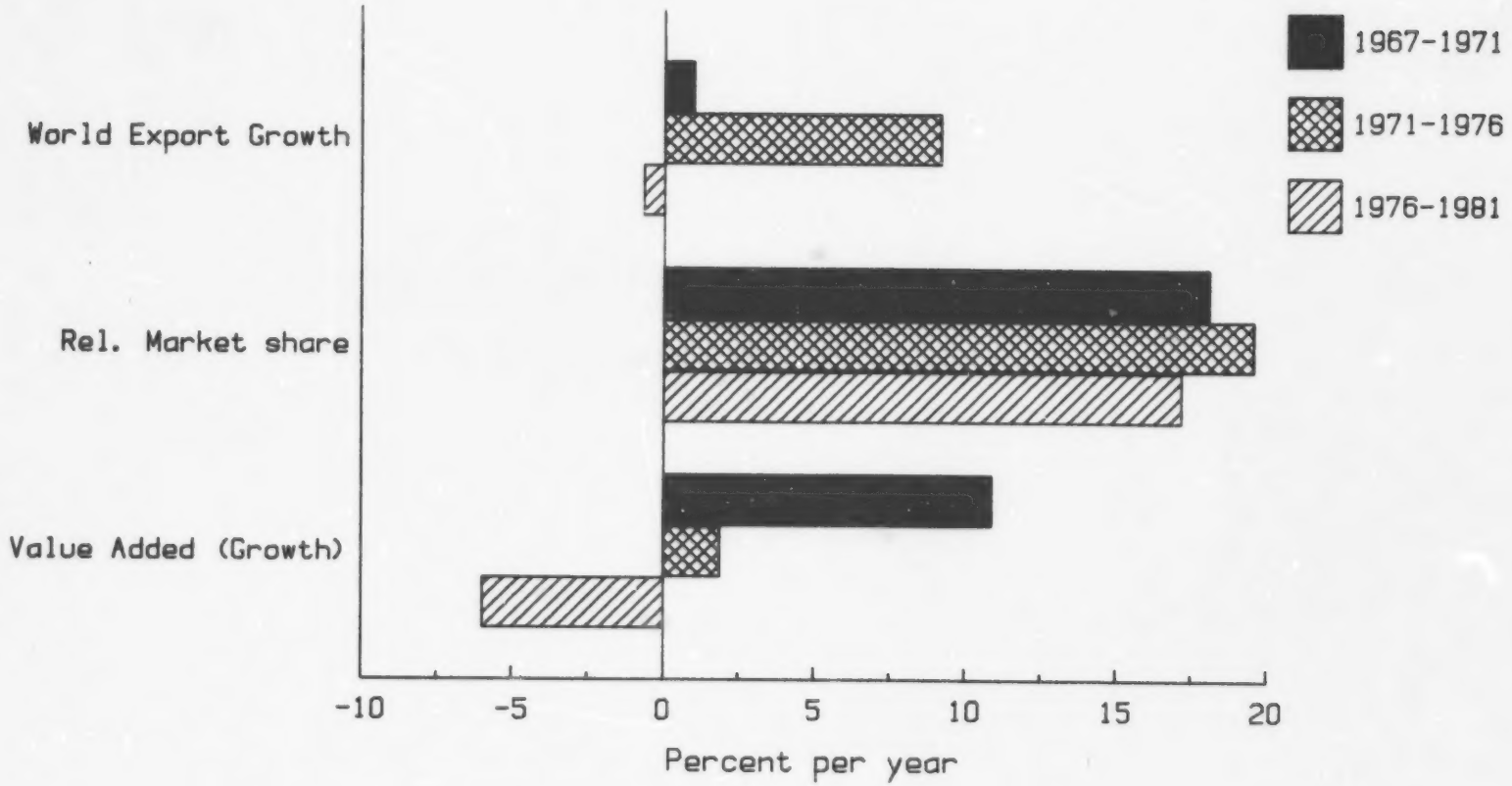


Exports and Value Added growth figures are real

Canada
1967 - 1981

5.5

The Motor Vehicle Component industry suffered the same problems as the automobile assemblers

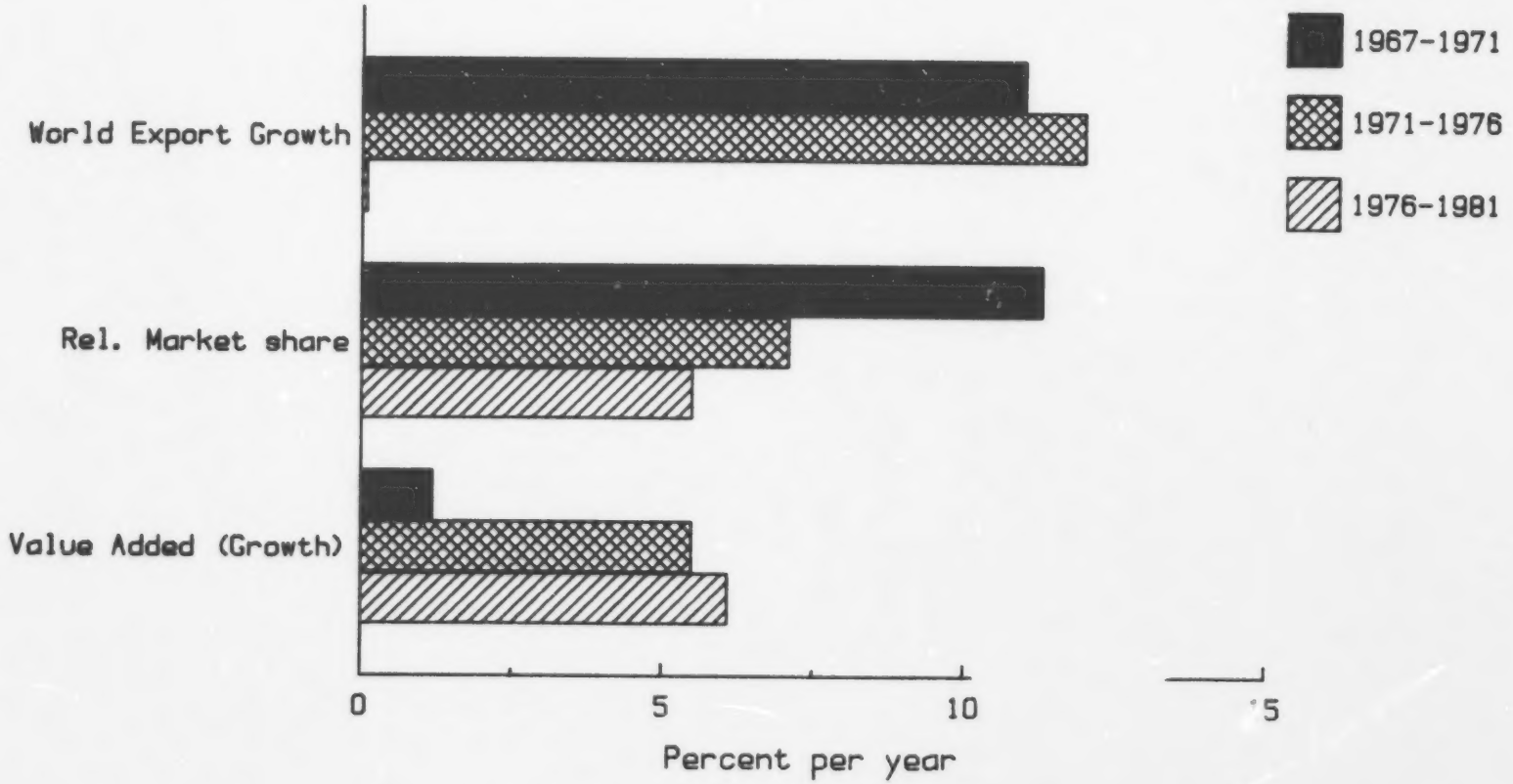


Exports and Value Added growth figures are real

Canada
1967 - 1981

5.6

Canada's telecommunication equipment industry experienced a declining trend in market share



Exports and Value Added growth figures are real

Canada
1967 - 1981

The Process of Economic Growth

At the firm level, the growth in output of a business unit is linked directly to the growth in demand for the products of the industry in which it competes. In growth markets, a firm can expand without having to capture market share from its competitors. In stagnant or declining markets, output growth is more difficult to achieve because market share can be gained only through competitive battles. Such efforts are difficult and costly, and often lead to diminished profits for all competitors, at least in the short run. For this reason, most business firms naturally seek to grow in growing markets.

The same is true for nations competing with each other in international markets. National industries that serve growing markets find that growth in exports is easier and more profitable than do industries that serve international markets that are stagnant or declining. For a small, open economy, participation in high growth export markets is a vital factor in overall economic growth.

Figure 5.7 shows Canada's market share performance in industries that were in the top third of a ranking of real growth in exports during 1976-81. Some unfavourable trends are apparent. The change in market share figures are the differences between Canada's Relative Market Share in 1976-81 and its share in the previous period — 1971-76. Canada lost its share in many of these industries and gained its share in only a few.

Canada suffered substantial share losses in industries with medium growth rates (see Figure 5.8), such as the motor vehicle and motor vehicle parts industries. In this group, no industry showed a substantial gain in Relative Market Share.

Canada has also lost share in industries with low growth rates (see Figure 5.9). The largest loss in share has been in the pulp and paper industry, which faced intense competition from the rapidly growing industry in the US South. Market share changes in low growth industries are usually based on price competition. Low growth industries are frequently mature, with stable technologies and well-established manufacturing systems. Low cost competitors usually have access to low wage labour or to low cost raw materials. The US South offers both advantages to its pulp and paper industry: the fast-growing southern pine supplies the fibre, and wage rates for the generally non-union labour, who have few alternative job opportunities, are low.

The other key factor in the growth process is technology. Industries with high rates of technological change offer many opportunities for growth in both market share and absolute sales. Countries with poor starting positions in these industries can quickly improve their competitiveness by achieving breakthroughs in either product or process technologies, or both. By offering better products or by finding ways to manufacture existing products at a lower cost than competitive industries in other countries, a country that consistently outperforms others in technology development can improve its position.

Figure 5.10 displays Canada's performance in industries that are ranked in the top third for their technological intensity. This ranking was arrived at by the US Department of Commerce, based on the ratio of R&D expenditures to sales in these industries in the United States (Kelly, 1975). Since the US leads the world in the development of high technology products, the ranking provides a reasonable indicator of technological intensity for the industries worldwide. Canada's market share deteriorated in most high technology industries, indicating that Canadian industries have not been able to execute a technology-based growth strategy that is as effective as their competitors'.

Some market share improvements have been made in Canadian industries that are of medium technological intensity (see Figure 5.11). In these industries, the basis of competitive rivalry is likely to be something other than the achievement of technical breakthroughs. A pattern of share gain in some of these industries is consistent with a national strategy that is not technology-intensive, as appears to be the Canadian case.

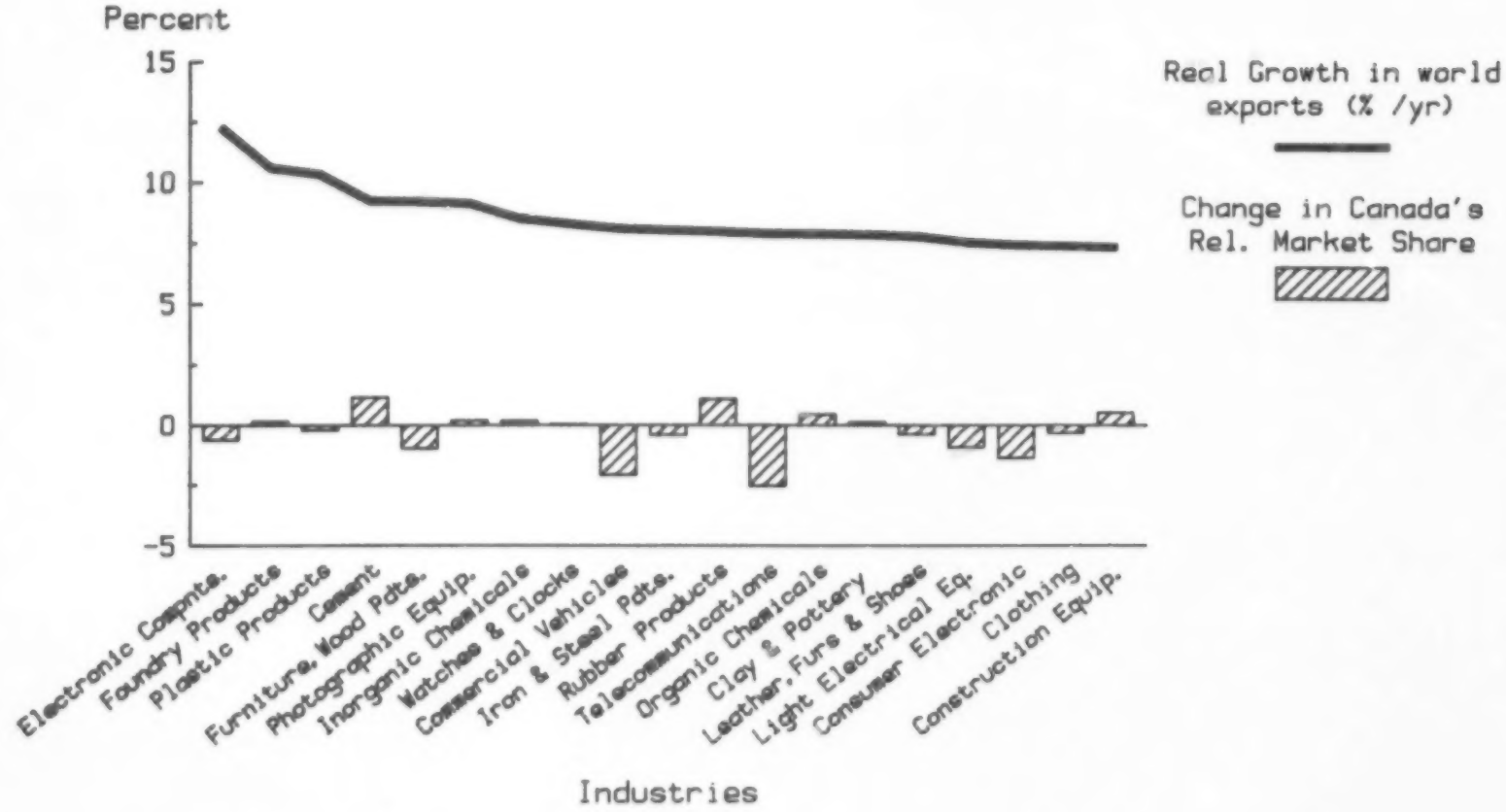
Finally, Figure 5.12 shows Canada's market share performance in low technology industries. Here the basis of competitive rivalry is more likely to be a matter of pricing policies. Low prices require either low cost positions or government subsidies for exports. Evidently, Canadian industries in the low technology group have lost ground to industries in other countries which have cost advantages or which subsidize their exports.

Let us now examine the combined impact of market growth rates and technological intensity, the two key factors in the economic growth process that has just been described. Figure 5.13 shows the change in Relative Market Share of the Canadian portfolio between 1967 and 1981. Industries are divided into nine groups, based on rankings of growth in world exports and technological intensity. Canada lost market share in all groups except the one with high growth and medium technology. It suffered a substantial share loss in all high technology groups.

This pattern of market share losses in key industries, which have the potential to make significant contributions to economic growth, explains much of the reasons for the current weaknesses of the Canadian manufacturing portfolio. More seriously, it shows no evidence of a conscious national strategy to achieve economic growth.

5.7

In industries with high real growth rates, some unfavourable trends appeared in Canada's market share

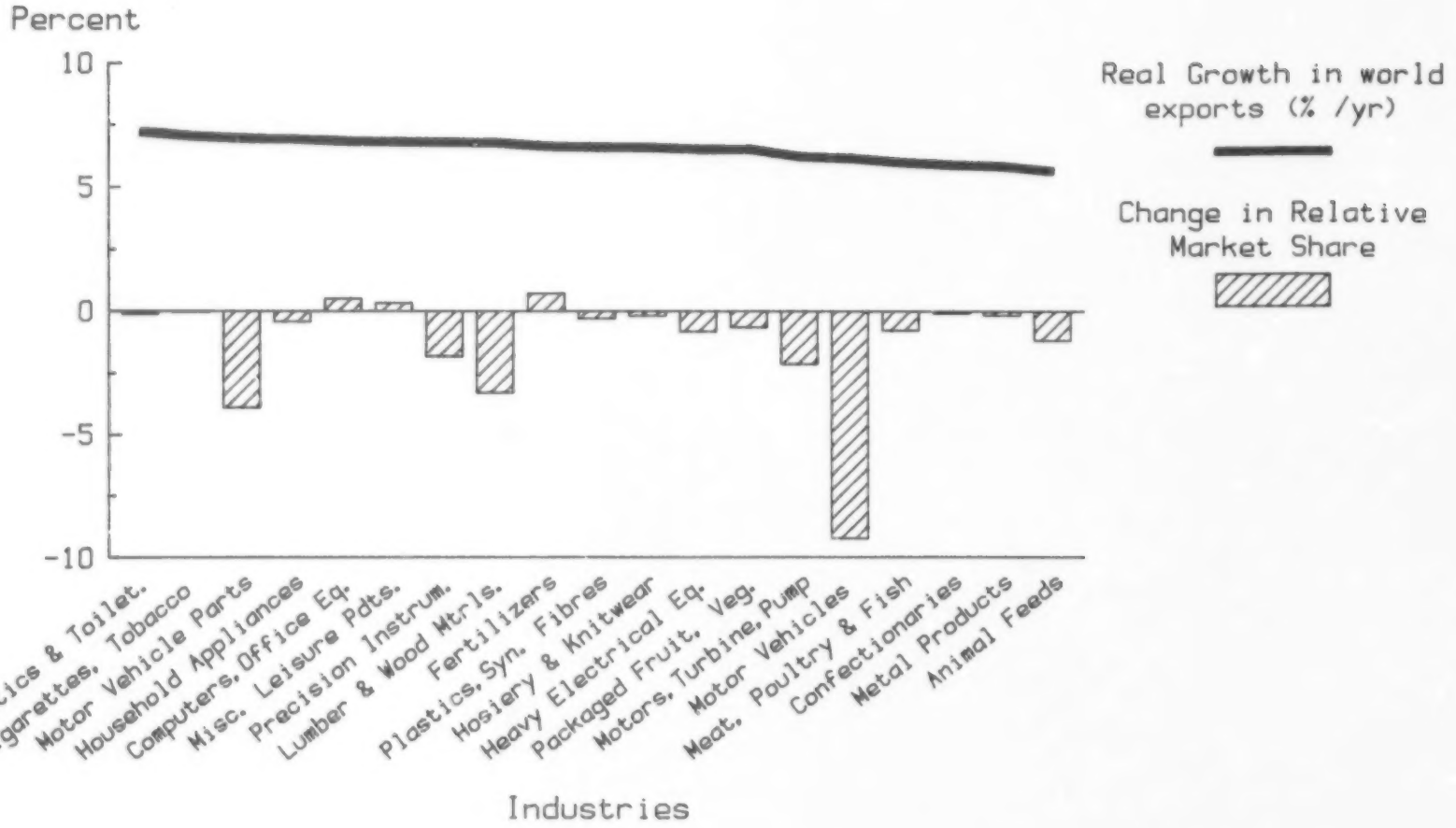


Industry Sectors ranked by real growth in world exports. Change in Relative Market Share shows 1976-81 less 1971-76

Canada
1976-81 vs. 1971-76

5.8

Canada experienced substantial share losses in industries with medium growth rates

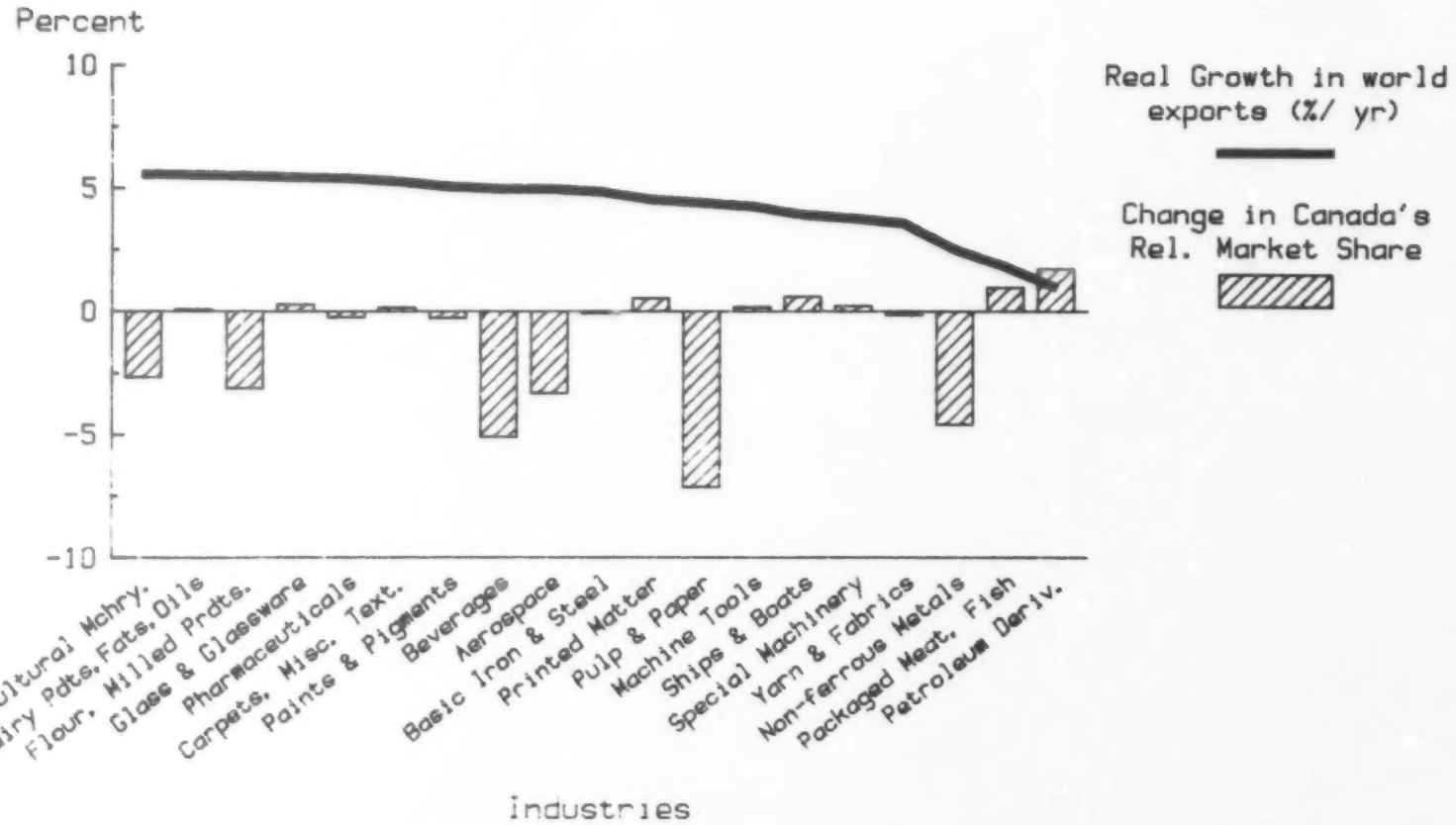


Industry Sectors ranked by real growth in world exports. Change in Canada's Relative Market Share shows 1976-81 less 1971-76

Canada
1976-81 vs. 1971-76

5.9

Canada has also lost share in industries with low growth rates

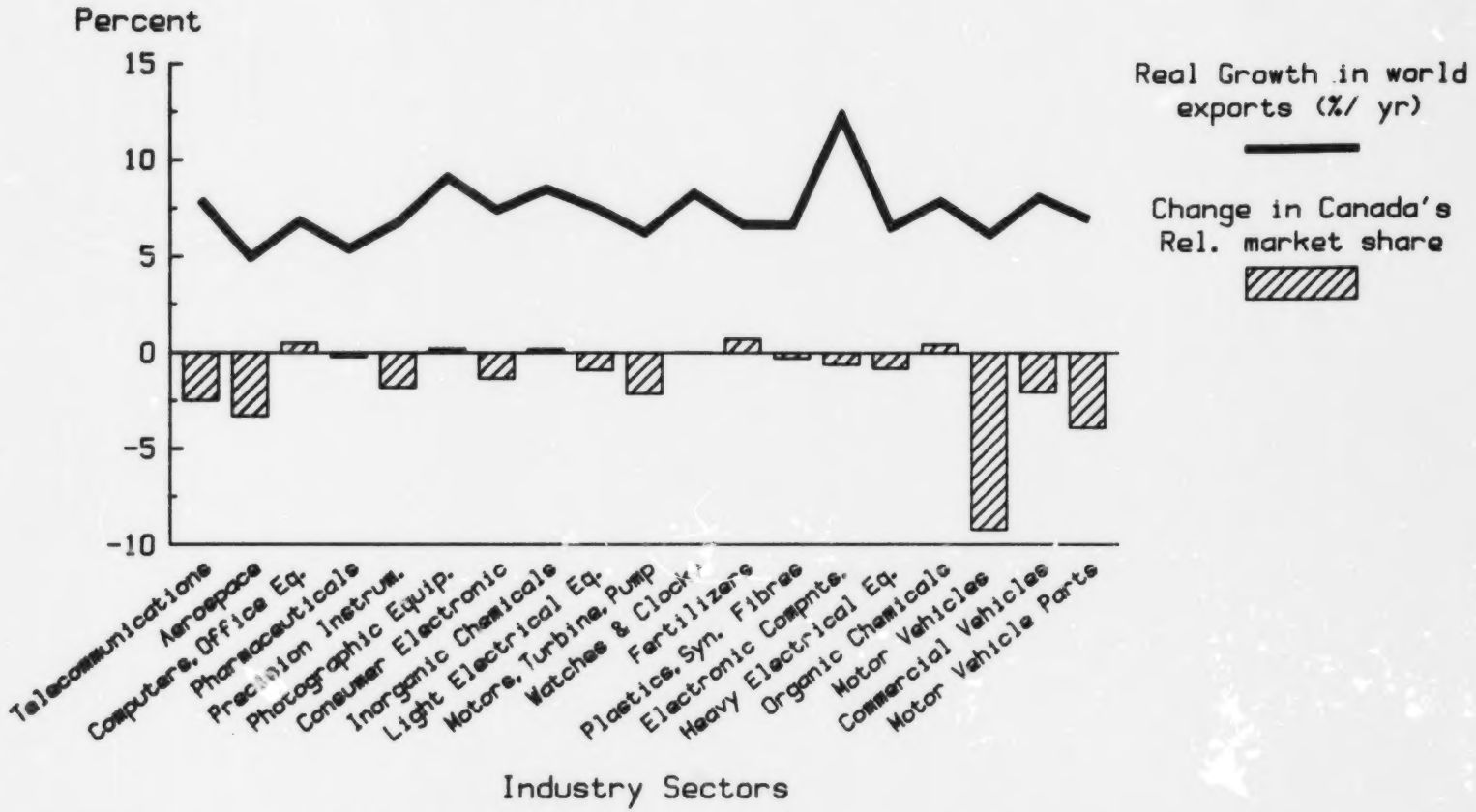


Industry Sectors ranked by real growth in world exports. Change in Relative Market Share shows 1979-81 less 1967-69

Canada
1967 - 1981

5.10

Canada's market share deteriorated in most high technology industries

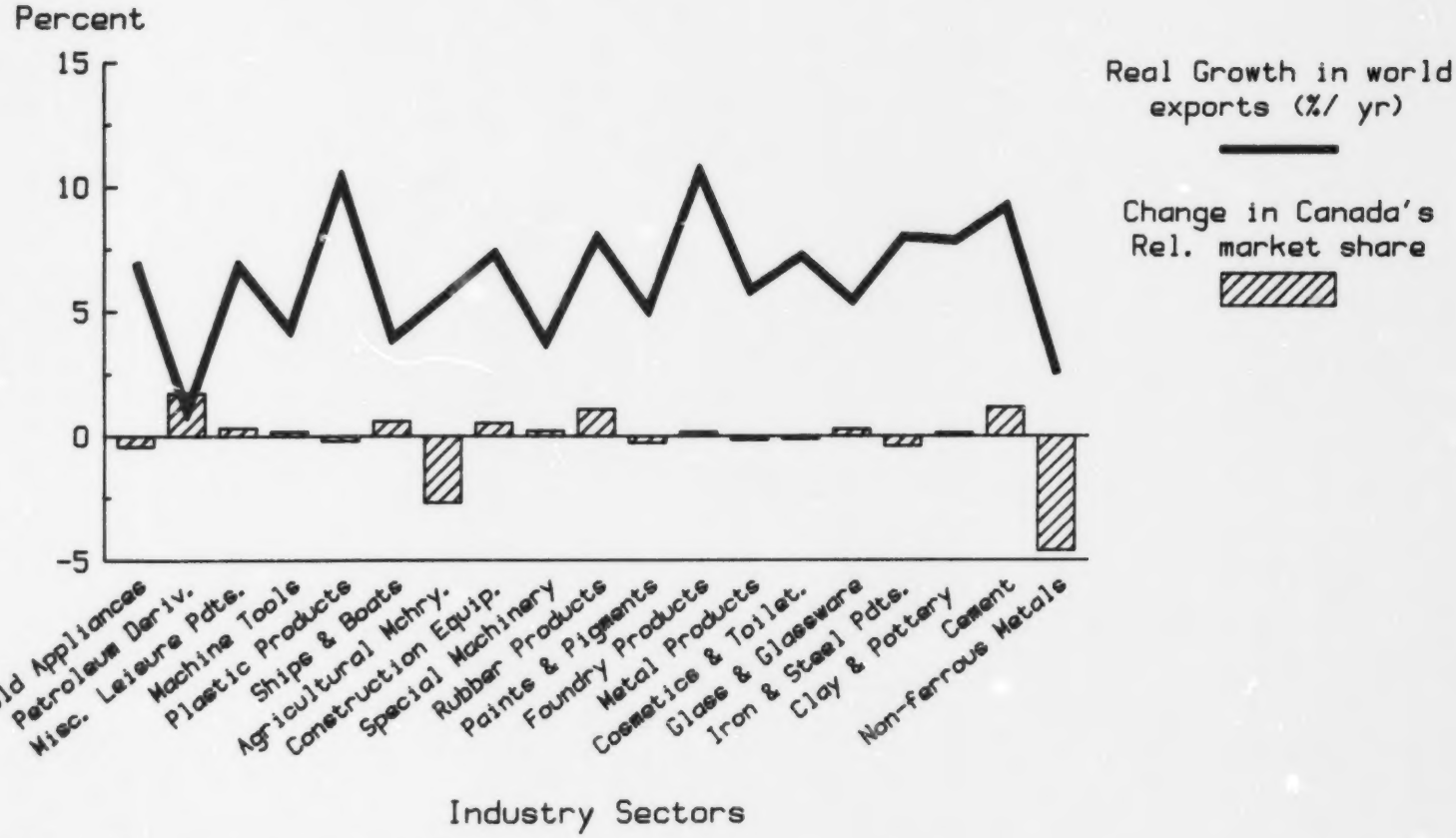


Industry Sectors ranked by technological intensity. Change in market share shows 1976-81 less 1971-76

Canada
1976-81 vs. 1971-76

5.11

In some medium technology industries, Canada improved its share of world markets

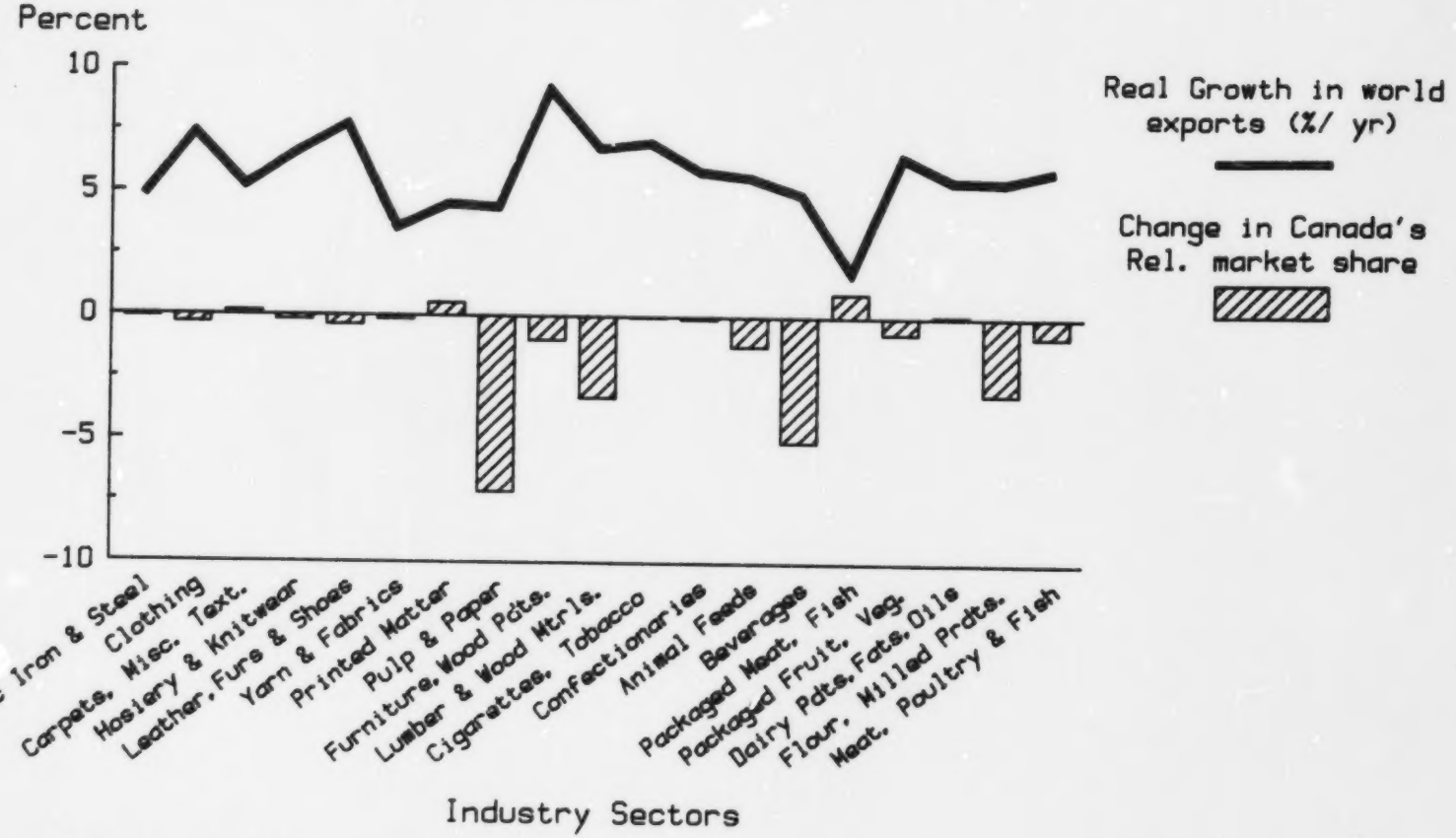


Industry Sectors ranked by technological intensity. Change in market share shows 1976-81 less 1971-76

Canada
1976-81 vs. 1971-76

5.12

Substantial declines in market share were experienced in almost all low technology industries

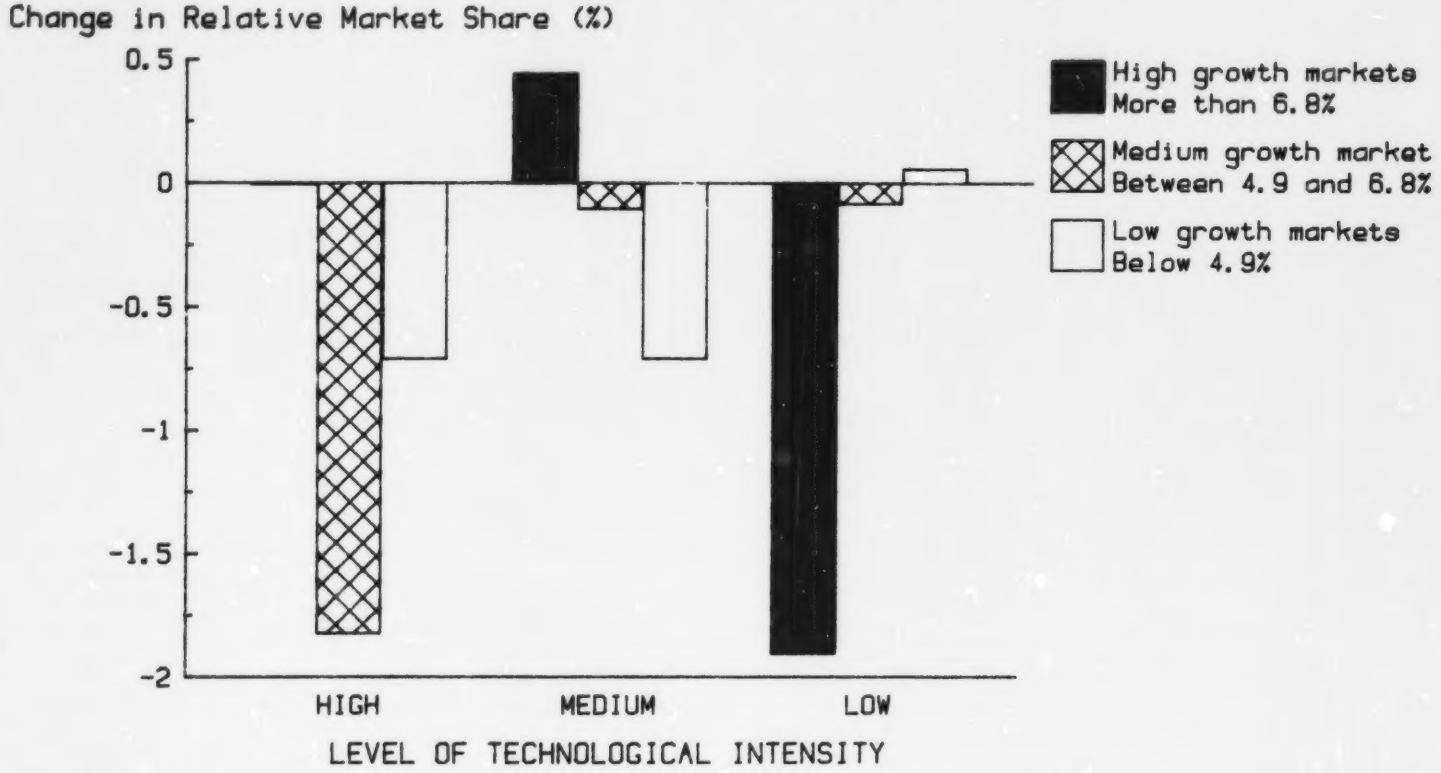


Industry Sectors ranked by technological intensity. Change in market share shows 1976-81 less 1971-76

Canada
1976-81 vs. 1971-76

5.13

Canada has lost market share in every industry group except the medium technology/high growth and the low technology/low growth groups



Bars show average change in relative market share from 1971-76 to 1976-81 for all industries in the category

Canada
1971 - 1981

The Contrast with Japan

The performance of the Canadian industrial portfolio stands in sharp contrast with its Japanese counterpart. Figure 5.14 presents the changes in the latter's portfolio, using the same measures as were used above for Canada. The interaction between market growth and technological intensity is striking when it is seen in the light of changes in Japan's Relative Market Share. This strong pattern is a result of the Japanese strategy described in Chapter 4. The most noticeable competitive improvement took place in high growth/high technology industries, which offer the best opportunity for contributing towards national economic growth. They are the very same industries in which Canada lost market share. In some instances, Canada's loss was Japan's gain.

Japan also improved its Relative Market Share in high growth/medium technology industries, though to a lesser extent. And, in sharp contrast, it gave up its market share in high growth/low technology industries, where share gains are often accomplished only by sacrificing profits. These industries make smaller contributions to economic growth. In fact, if subsidies are required to achieve increased market penetration, the net economic benefits can easily turn negative. Because such share gains result in a transfer of wealth to customers in other countries, the Japanese have avoided them.

Japan's withdrawal from low technology industries carries over to the medium and low growth groups. In both cases, industries have low potential for contributing to economic development because subsidies are required to win more markets.

Relative Market Share was also improved in industries in the medium growth/high technology group. When the basis of such improvement is superior product and/or process technology, the net economic effect is positive. This appears to be a field where shrewd manufacturing management appears to be particularly telling.

Figure 5.15 shows the Japanese industrial portfolio in the 1967-71 period. The heavy weighting toward the top left-hand quadrant indicates a very healthy portfolio. Group 1 was exceptionally large. These are the high growth/high share industries, which make the most contribution to economic growth. They accounted for 41 per cent of total value added and grew at 24.5 per cent in real terms, far faster than world trade in general. Group 4 was large as well, accounting for a further 13 per cent of total exports. Japanese exports of these industries grew at 14.5 per cent per year in real terms. Therefore over half (54 per cent) of the Japanese industrial portfolio was composed of sixteen industries which were experiencing high or medium growth in world exports and in which Japan had a strong competitive position and continued to increase its share of world trade. No wonder the Japanese economy did so well during this period!

The slowdown in growth of world exports between 1971 and 1976 affected Japan less than it did other countries because of the competitive strength of the Japanese portfolio. Figure 5.16 shows that Japan's portfolio remained healthy throughout this period. In fact, Japan's exports grew faster than the weighted average of world exports in the markets it served, as is indicated by the improvement in the country's Relative Market Share from 29.3 per cent in 1967-71 to 31.6 per cent in 1971-76. Part of this improvement was accomplished by shifting out of low growth industries in which the country had poor competitive advantage (group 9). Exports of this group actually declined by 9.0 per cent (real) per year. Similarly, Japan decreased its reliance on low growth industries in which it had a strong competitive position (group 7). The flexibility of the Japanese industrial structure has been remarkable; it has a great capacity to shift investment to industries that make the largest contributions towards the country's economic growth.

The resilience of the Japanese portfolio is further demonstrated in Figure 5.17. The world markets that Japan served declined in real terms by 1.2 per cent a year over the 1976-81 period, yet Japanese exports grew in real terms. Relative Market Share improved further to 34.8 per cent, leaving Japan with a very strong portfolio. Growth in exports was particularly relevant in groups 1 and 4, which saw exports grow in real terms by 5.9 per cent and 5.3 per cent respectively in markets that were stagnant at lower rates.

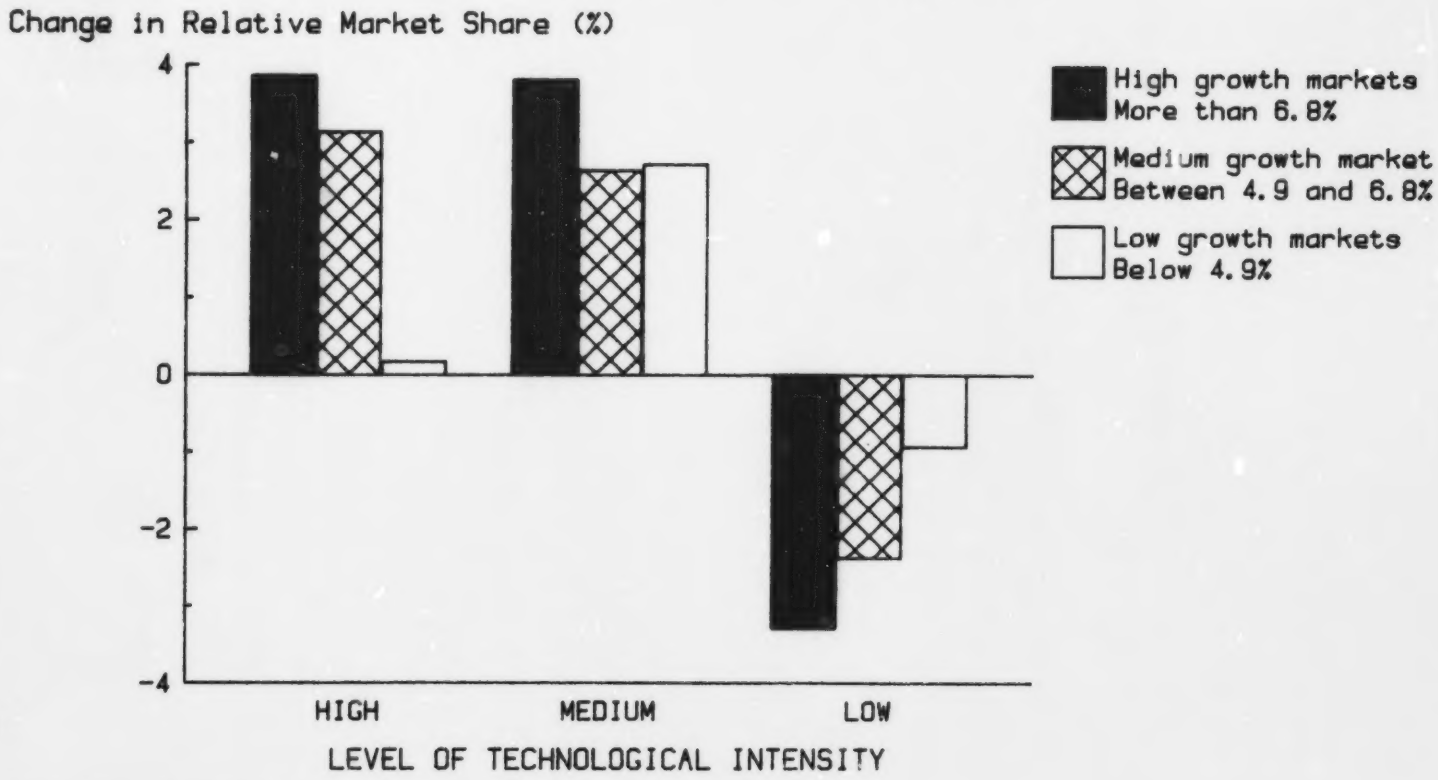
Canada's Performance

Against this pattern of remarkably sustained growth performance, the Canadian picture does not look too good; the deterioration in Canada's position in world markets is a cause for concern. Figure 5.18 shows Canada's share of world exports from 1967 to 1981, arrayed against total real world exports in 1981 US dollars. While world exports grew in real terms, Canada lost market share. This share loss occurred through the 1970s, a period when world exports grew. To some extent, growth in markets offset the effect of Canada's market share losses, so that the country did not experience absolute economic decline, even though its relative competitive position deteriorated. World exports experienced a sharp drop in 1981, and the impact of the competitive decline was severe in Canada, which went into a serious economic recession.

The decline in competitive position occurred across the board. As Figure 5.19 shows, every industry group except one experienced declines in Relative Market Share. The share decline was greatest in secondary manufacturing, which accounts for the largest proportion of value added in the manufacturing sector. The automotive sector also suffered a substantial decline in share.

5.14

Changes in Japan's relative market share reflect the explicit national strategy of export-based economic growth

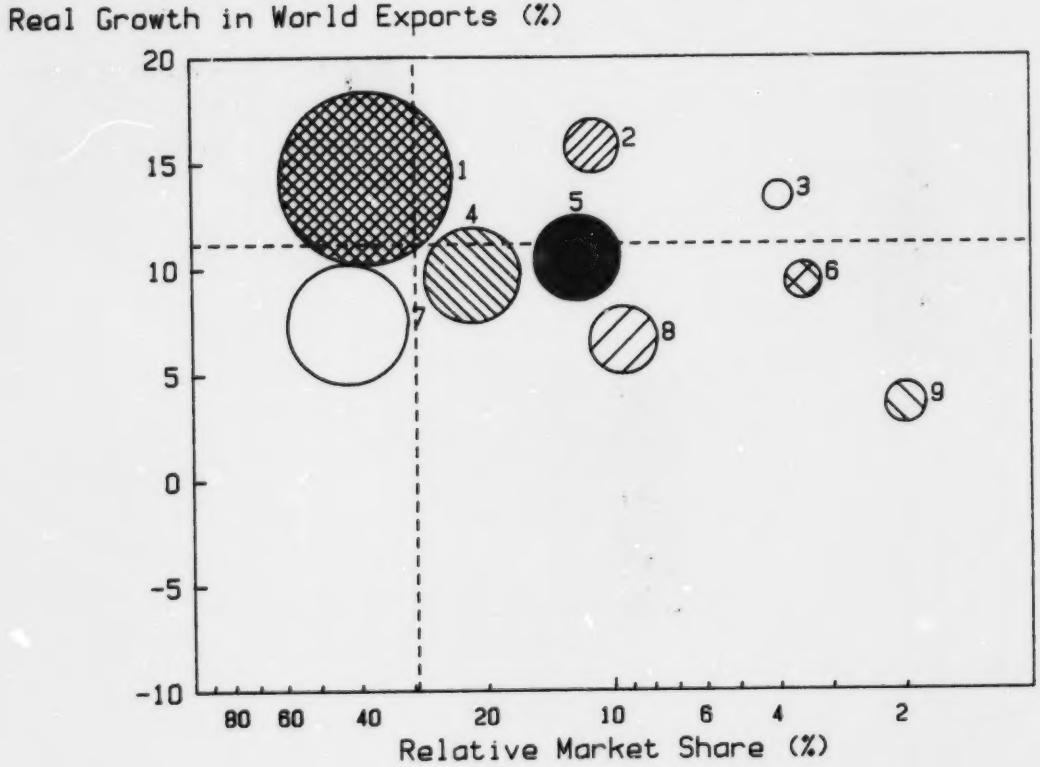


Bars show average change in relative market share from 1971-76 to 1976-81 for all industries in the category

Japan
1971 - 1981

5.15

The heavy weighting towards the top left-hand quadrant made for a very healthy portfolio for Japan



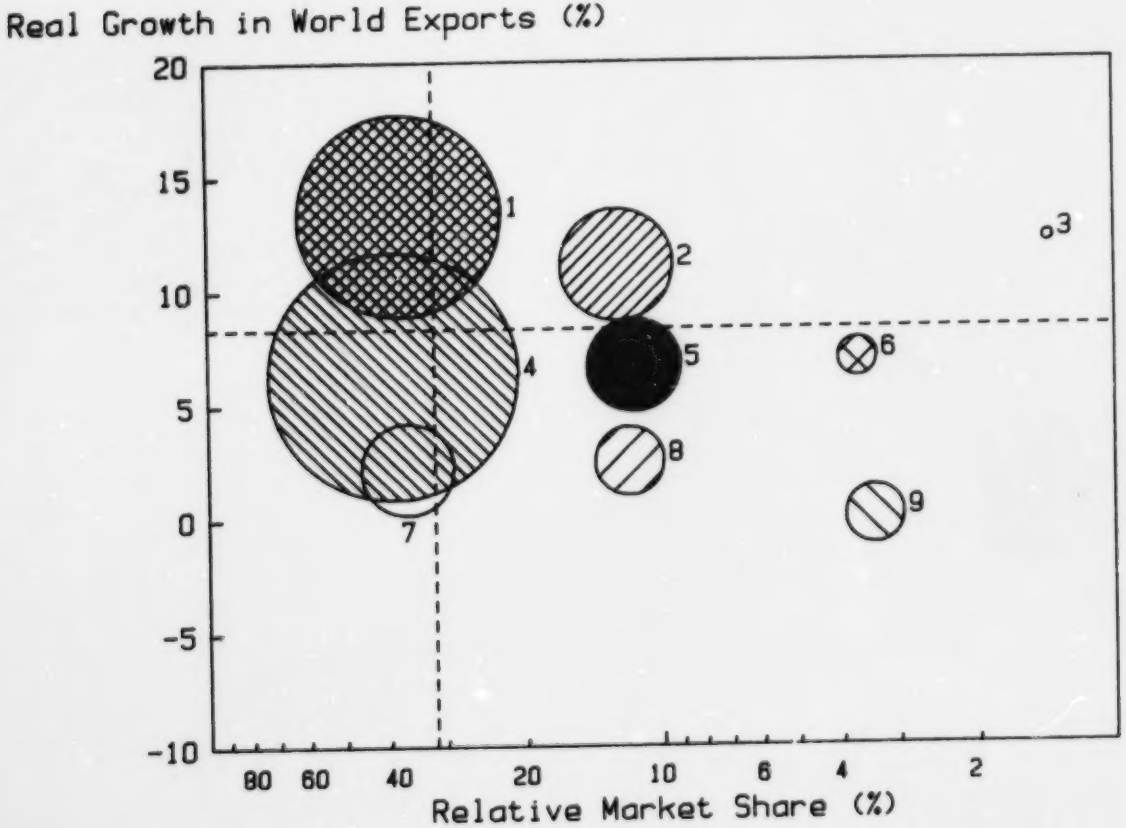
1. Hi-growth, Hi-share
2. Hi-growth, Med-share
3. Hi-growth, Lo-share
4. Med-growth, Hi-share
5. Med-growth, Med-share
6. Med-growth, Lo-share
7. Lo-growth, Hi-share
8. Lo-growth, Med-share
9. Lo-growth, Lo-share

1. Circles proportional to real exports (1971 $)
2. Weighted average world exports grew 11.16%
3. Weighted avg. relative market share was 29.3%

Japan
1967 - 1971

5.16

Japan's portfolio remained healthy despite the slowdown in growth of worldwide exports following the Oil Crisis



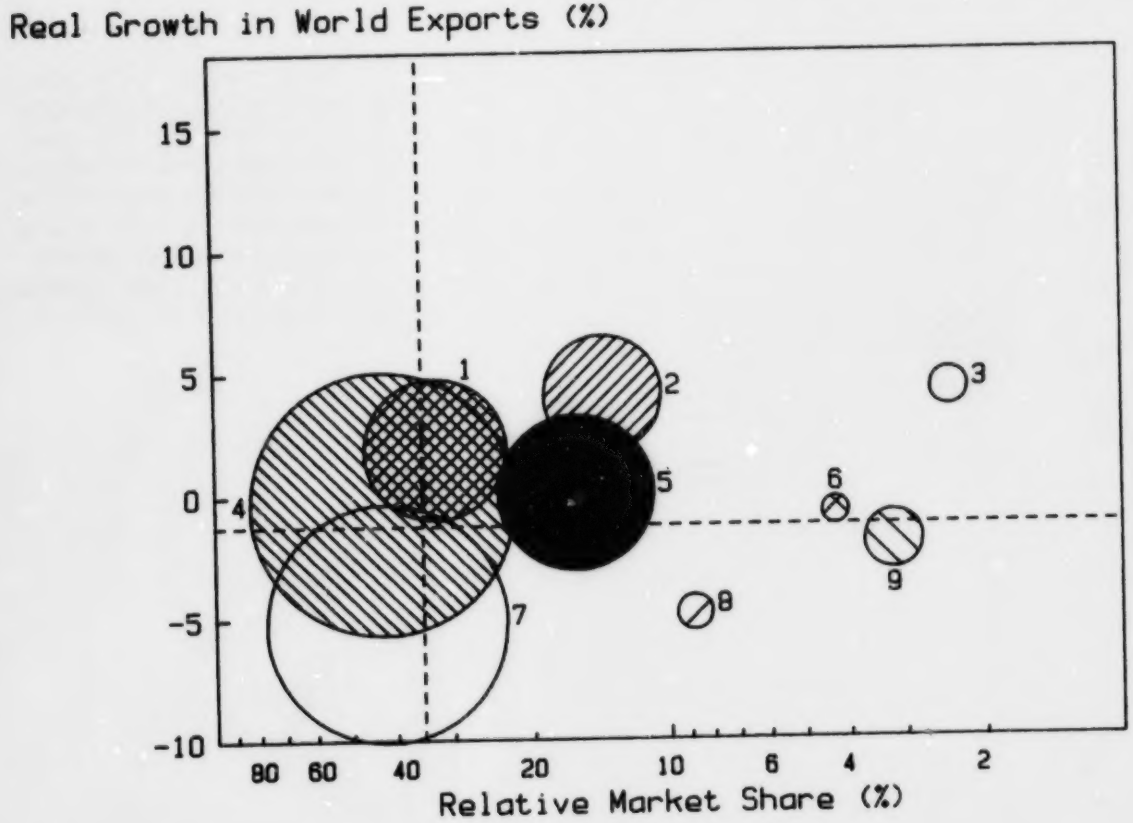
1. Hi-growth, Hi-share
2. Hi-growth, Med-share
3. Hi-growth, Lo-share
4. Med-growth, Hi-share
5. Med-growth, Med-share
6. Med-growth, Lo-share
7. Lo-growth, Hi-share
8. Lo-growth, Med-share
9. Lo-growth, Lo-share

1. Circles proportional to real exports (1971 $)
2. Weighted average world exports grew 8.31%
3. Weighted avg. relative market share was 31.6%

Japan
1971 - 1976

5.17

Despite a decline in growth of world markets Japan's exports continued to grow because of its strong competitive position



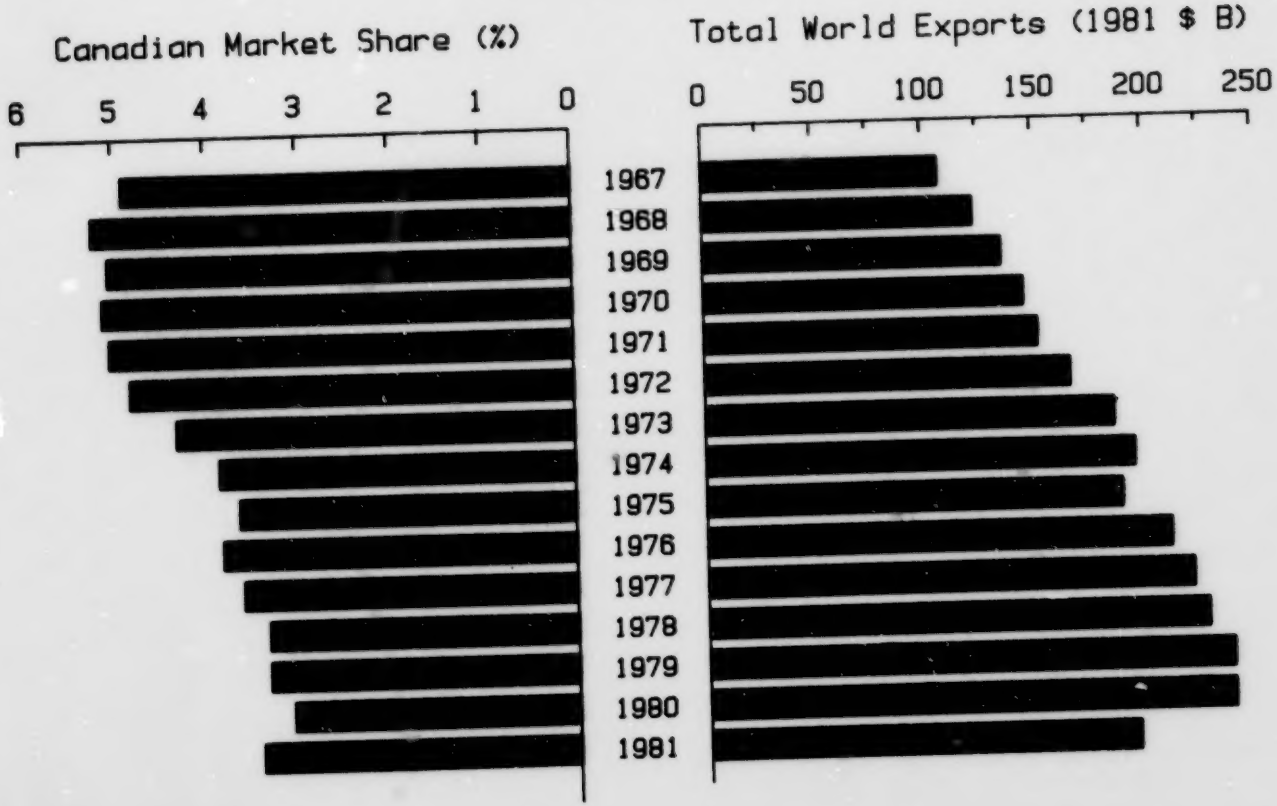
1. Hi-growth, Hi-share
2. Hi-growth, Med-share
3. Hi-growth, Lo-share
4. Med-growth, Hi-share
5. Med-growth, Med-share
6. Med-growth, Lo-share
7. Lo-growth, Hi-share
8. Lo-growth, Med-share
9. Lo-growth, Lo-share

1. Circles proportional to real exports (1971 $)
2. Weighted average world exports grew -1.25%
3. Weighted avg. relative market share was 34.8%

Japan
1976 - 1981

5.18

While world exports grew in real terms between 1967 and 1980, Canada lost market share

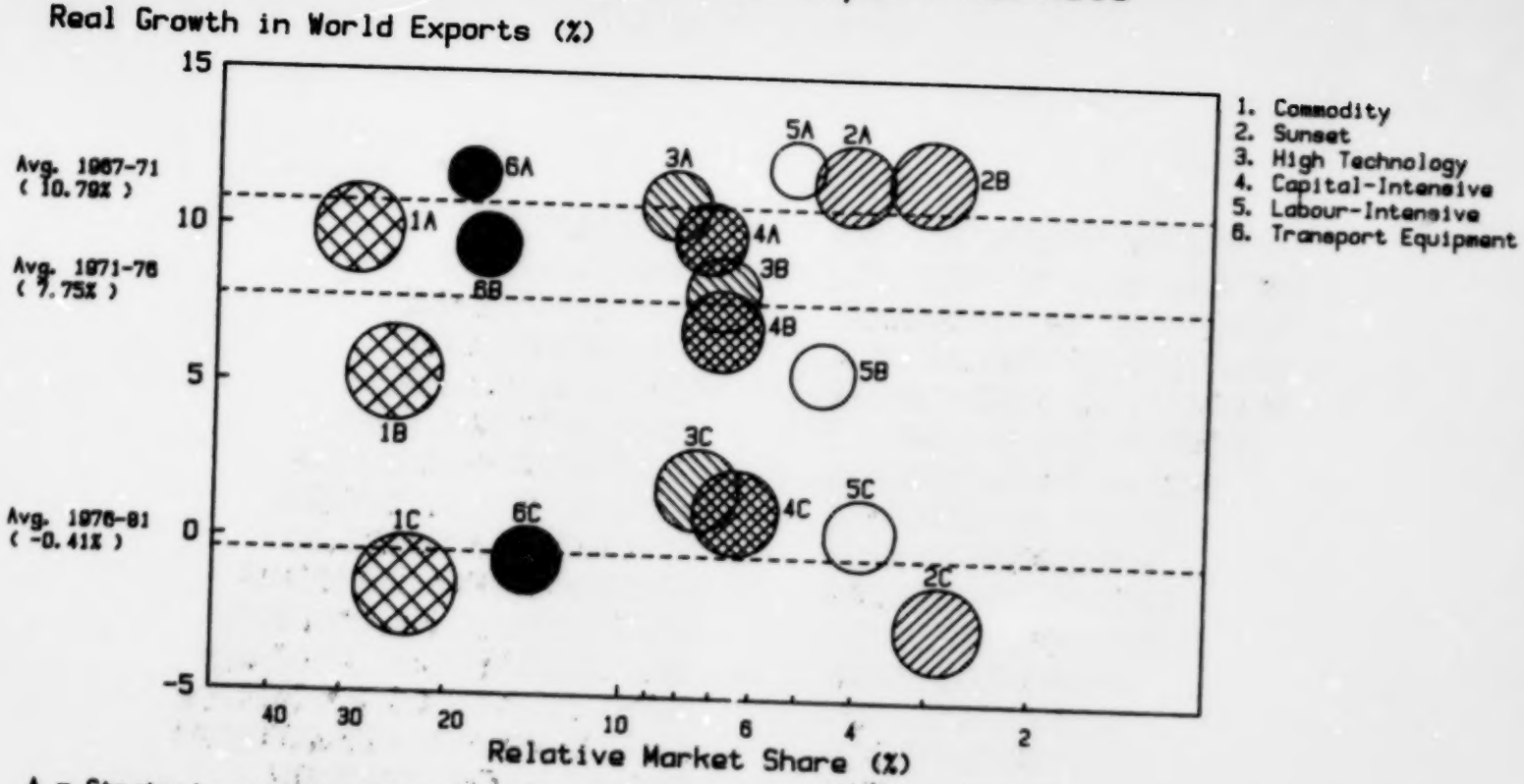


Total World Exports figures are real 1981 U.S. $ Billion

Canada and World
1967 - 1981

5.19

The strategic environment of the 6 manufacturing sectors deteriorated with the substantial slowdown in their export markets



A = Strategic position of each sector in 1967-71
B = Position of the same sector in 1971-76
C = Position of the same sector in 1976-81

Canada : 1967-71, 1971-76 and 1976-81

Part II
DIFFERENTIATED NATIONAL STRATEGY

Chapter 6
A PORTFOLIO STRATEGY FOR CANADA

The diagnosis presented in the preceding chapters leads one to conclude that considerable strategic weaknesses have developed in Canada's manufacturing industries. Let us now examine what can be done to remedy these problems, by analyzing national strategy at the government level. As in the previous chapters, the unit of analysis remains the industry. We shall examine the strategic environment of those clusters of industries identified in Chapter 3 and attempt to develop policy recommendations for each cluster separately.

In a sense, the material presented in the following chapters should be regarded as part of a process of "bottom-up" strategy development. The strategies for a given sector must make sense in light of the particular circumstances that confront firms in that sector. It is necessary first to take account of the key factors governing success at the firm level and then devise a set of national policies to provide the environment that is most conducive to helping businesses grow and prosper.

Although the national strategy we propose is differentiated, it concentrates on a common theme: the separation of economic policy from social policy, and a preference for "hands-off" approaches for the former, consistent with a growth/development objective.

Recent economic performance in Canada has clearly been unsatisfactory. We believe that the reason for this is the lack of cohesion between national economic strategy and the external environment in which Canadian industry competes. In particular, as was argued in Chapter 3, the combination of income distribution goals with a "hands-on" policy bias can have debilitating consequences for the industrial portfolio.

The Primacy of Social Goals

We must emphasize most strongly at this point that we are not arguing against social goals and social programs. We fully believe that a just society must respond to the needs of its disadvantaged citizens. The elderly must be guaranteed reasonable income; the poor deserve assistance; unemployed people have a right to be able to find work, and until they get jobs they have a right to financial help; socially disadvan-

taged groups have a right to seek redress from society; and it is the rightful role of government to tax its more prosperous citizens in order to help those who are poor. In short, social goals are a priority in a civilized, democratic society.

What we maintain is that it does not make sense for a government to try to achieve social goals by means of a "hands-on" approach to industrial policy. Instead, what we propose is the use of separate instruments to achieve social and economic development objectives. Social goals should be achieved by direct social programs; and these programs should continue to be run by a government machinery that is keenly aware of human values and the individual's rights and privileges.

Industrial Policy Framework

Industrial policy should be removed from the social policy framework. It should be directed towards growth and development, and should be concerned with baking more pie, not with how the existing pie is to be divided.

The second change we propose is that industrial policy should jettison the undifferentiated strategy that is currently being followed. Different strategies should be followed in different sectors of the economy. In some sectors, a growth strategy makes sense, but in others the strategy that should be adopted is one of orderly contraction of capacity and eventual withdrawal. And in still others, the appropriate strategy is one of careful maintenance of capacity and competitive position.

Let us elaborate. Figure 6.1 illustrates the broad thrust of the proposed differentiated strategies approach. It suggests that each industry be allocated to one of three sectors, and that distinctive strategies be developed for each sector. The three sectors are: the Commodity Sector, the Sunset Sector, and a General Sector (the latter covers the remaining six sectors described in Chapter 3).

The Commodity Sector consists of raw materials and primary industries. Products of these industries are heavily traded, and in most cases these industries rely greatly on export markets. Taken together, they represent a substantial proportion of the exports of goods from Canada. The international markets for these commodities are mature; overall demand growth is small, and sometimes demand may actually be declining. On the other hand, Canada has a strong competitive position in the Commodity Sector. In most instances, Canada's high Relative Market Share is a consequence of its substantial endowment of natural resources and raw materials.

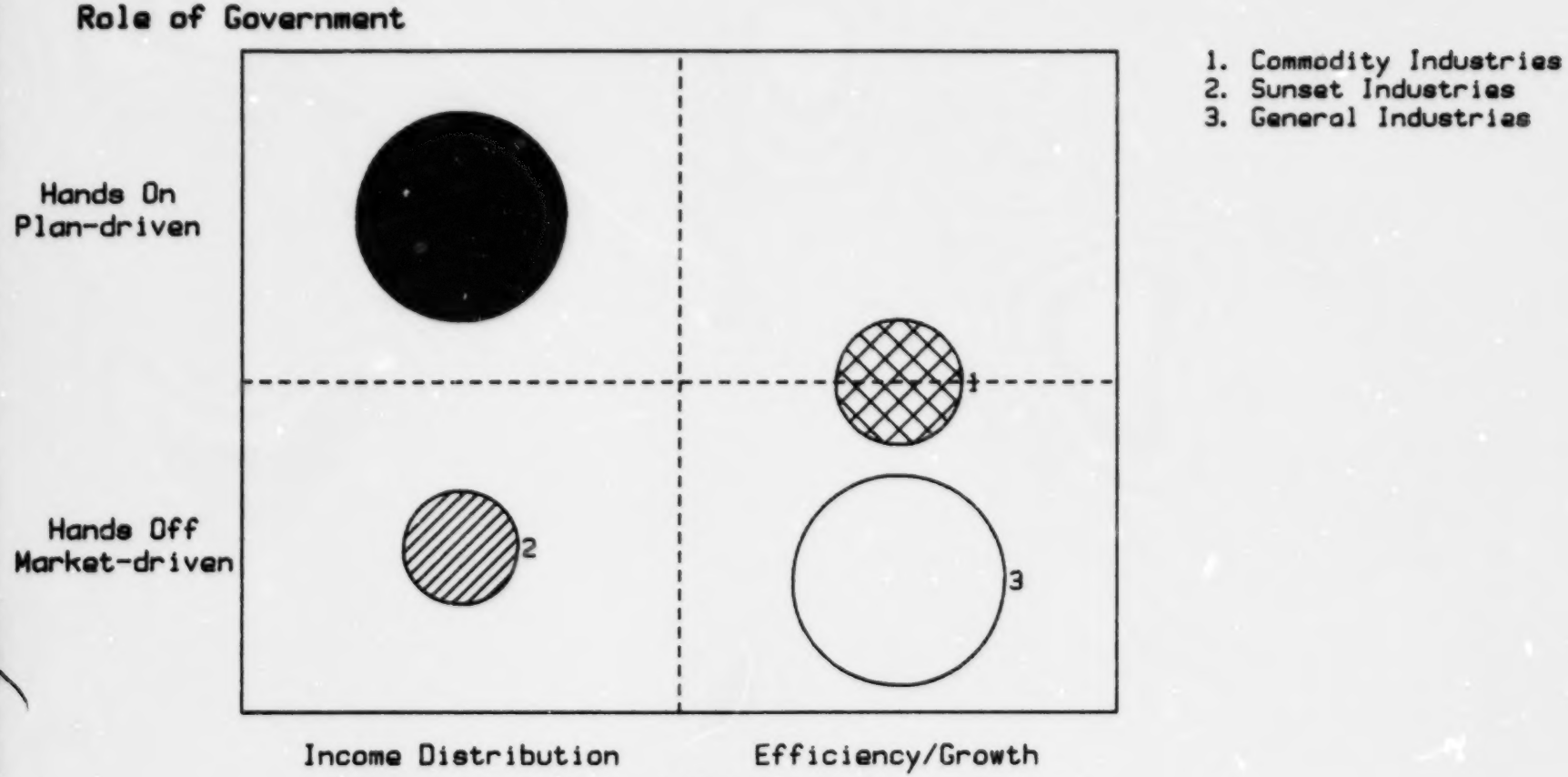
The Sunset Sector subsumes industries that have lost their competitive advantage and are now subject to competition from imports. These industries provide employment to a significant segment of the labour force, but these jobs are at risk because foreign manufacturers are able to sell their products at prices below the Canadian cost of production. If market forces were allowed to operate freely, many Canadian businesses in the Sunset Sector would have to close down, and large numbers of people would be put out of work.

All other industries — a rather mixed group — fall into the General Sector. In some cases, demand is growing, but in others it is stagnant or declining. Certain Canadian businesses in this sector have the capacity to compete well, while others don't. A significant portion of value added for this sector can be attributed to the automobile assembly and parts industries, which are closely tied to the US market. Since the overwhelming bulk of exports in these industries is to the United States, the General Sector is therefore vitally affected by the state of Canada-US relations.

Prospects for employment growth in the first two sectors are not too sanguine. In the Commodity Sector, employment will at best remain level; some jobs will be lost because of productivity gains and the adoption of more capital-intensive technology, both of which are necessary to maintain cost competitiveness. These job losses may be offset by gains from sales increases, a consequence of slight improvements in market share. But it is not realistic to expect significant job growth in the Commodity Sector. In the Sunset Sector, too, it is anticipated that the number of jobs will decline. Obviously, job growth in manufacturing will have to come from industries in the General Sector.

6.1

A three-pronged differentiated strategy is proposed for Canadian industrial policy, along with a separation from social policy



1. Commodity Industries
2. Sunset Industries
3. General Industries

1. Circles of industrial sectors proportional to value added
2. Black circle shows Social Policy

Canada
Proposed

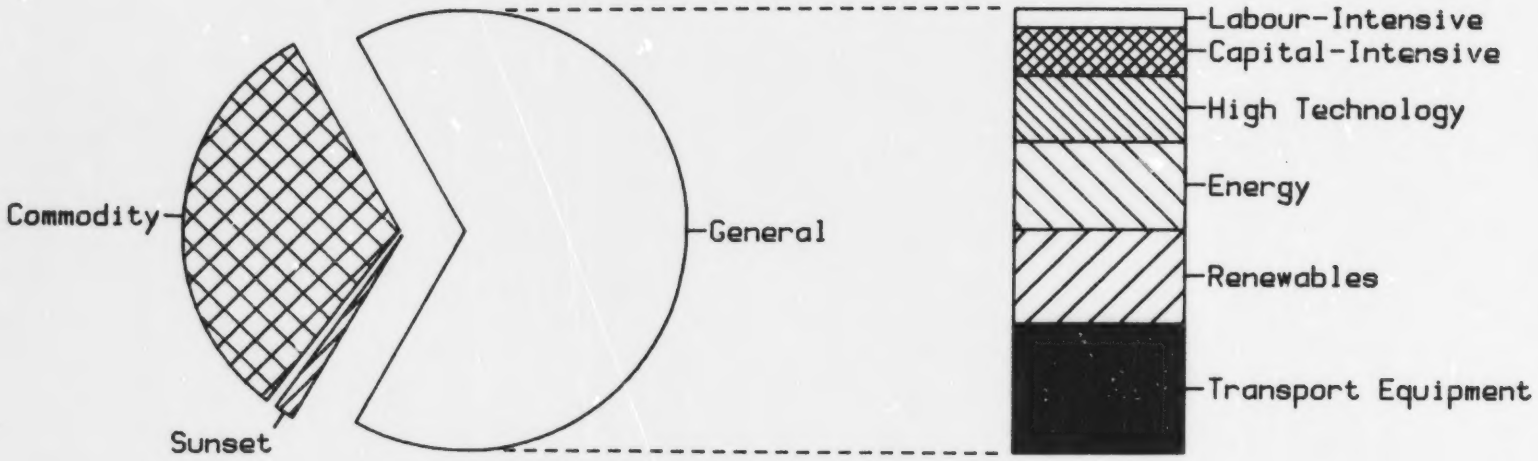
Strategies in which goals are clearly growth/development orientated are called for. Income distribution priorities should not govern these strategies. As has been argued earlier, economic growth is more likely under a "hands-off" regime than under a "hands-on" policy because of the tendency of the latter programs to pay more attention to distributional goals than growth goals. Therefore, the appropriate strategy for the General Sector should fall squarely in the lower right-hand corner of our national strategy matrix. To the extent that strategies for these industries in this sector move away from this position towards a greater "hands-on" control by government or a firmer emphasis on distributional goals, the growth objectives of this sector will be compromised.

The proposed strategy removes government from case-by-case decision-making about individual firms. It is suggested that government's role is to establish the economic framework and climate for industries and then allow the free play of market forces to determine which firms grow and prosper and which do not. This is a form of "meta-management," where government is concerned with managing the context, rather than the content, of decision-making at the firm level.

The second recommended developmental role for government in the General Sector is to provide infrastructure and public goods for industry. This means fostering research and development, helping to train workers and managers, setting high production standards, controlling environmental pollution, and the other tasks designed to ensure that the common good is preserved. While most of these activities imply a proactive role for government, they need not require the government to engage in case-by-case decision-making about individual firms. Indeed, they should be structured so there is no necessity for this.

6.2

The General Sector is made up of six subsectors, which account for a substantial proportion of exports



Total Exports were
$ 73.5 B

Total Exports for
these sectors were $ 48.64 B

All exports are average annual
in 1981 $ Billion

Canada
1976 - 1981

Chapter 7
A STRATEGY FOR THE COMMODITY SECTOR

The Commodity Sector comprises nine industries that process natural resource products (these are listed in Figure 7.1). This output consists of semi-finished or finished materials that become the inputs for other industries. During the 1976-81 period, Canada's commodity industries accounted for 410,000 of the country's 1,660,000 manufacturing jobs (see Figure 7.1). These nine industries have slow-growing or declining markets; in many cases, Canada is losing its market share (see Figure 7.2). Job growth has been poor in most commodity industries, and may become even worse in the future (see Figure 7.3).

Most raw materials are fungible commodities and are in principle easy to trade. However, competition in these markets is far from perfect. International markets for most commodities are governed more by the interplay of monopolistic and monopsonistic forces than by the impersonal forces of atomistic competition. Because of their size, buyers and sellers are able to influence the market in an oligopolistic way. Attempts to develop and exploit market power give rise to constant apprehension about the use of that power.

Strategic Issues

Markets for mature commodities that Canada depends on have become substantially monopsonized. Customers abroad have established intercompany coordination procedures that effectively monopsonize each national market. Consequently, Canadian exporters face an international market in which national markets often behave as a single customer group. Monopsonization creates special problems because it gives an excessive market power to these customers.

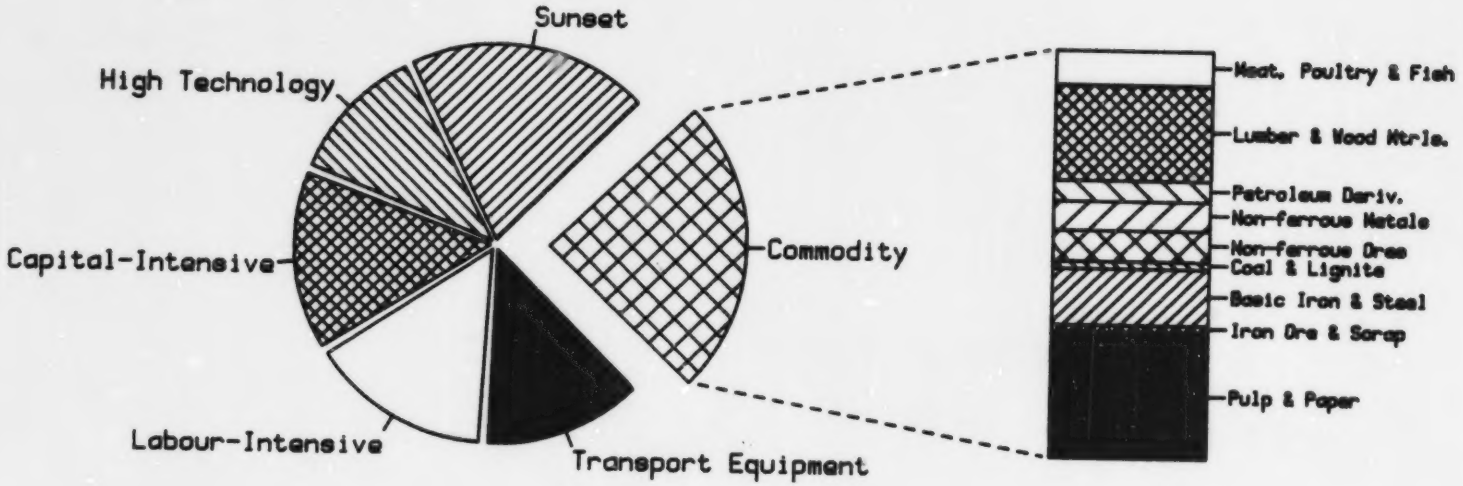
Let us consider two examples. The metallurgical coal industry has been the most significant area of export growth in western Canada during the last decade. Producers in British Columbia and Alberta have developed substantial mining capacity specifically for the export market. The bulk of these exports are to the Japanese steel industry, with modest shipments to other customers. Japanese steel-makers have developed a refined procurement coordination system for raw materials imported from abroad. This system has been created with the active encouragement of Japan's Ministry of International Trade and Industry and with the help and participation of large trading houses, major commercial banks and the Industrial Development Bank of Japan. For each major country of supply, the steel industry chooses one of the principal steel-making firms as the "designated negotiator." This firm then handles all negotiations with all the raw material suppliers from a particular country, regardless of which steel firm actually receives the raw material. The designated negotiator for Canada is Nippon Kokan. In addition, the industry leader — Nippon Steel — plays an active role in formulating policy for all supply arrangements, to ensure that procurement strategy maximizes the likelihood that the long-term supply outlook remains a healthy one.

A major element of this strategy is to encourage excess capacity in the supply system because the Japanese believe that excess capacity is their best assurance of stability of supply. It is also useful in maintaining price discipline among suppliers, who are urged to recognize that the Japanese have alternative supply sources should a particular supplier prove unreliable or make demands that are considered unreasonable. To this end, the Japanese have formulated a systematic policy of encouraging the development of new capacity and the expansion of existing capacity. To execute this policy, they have negotiated long-term contracts with new suppliers, taken minority equity positions in major projects and made a series of long-term loans to foster capacity development. They have also created an elaborate logistical system, which links these projects to tidewater steel mill locations in Japan.

It is noteworthy that these long-term contracts are not binding on the purchasers, either in terms of prices or annual volumes. Instead, prices and volumes are negotiated annually with each supplier by designated negotiators. During these negotiations, suppliers face a customer group that is highly coordinated, well-informed about the international supply situation, and intensely conscious that keeping down the costs of raw materials is a vital element in the steel industry's ability to maintain a low enough cost position to remain at the forefront of international trade in steel. This collusive strategy is actively encouraged by the Japanese government. Its support is reinforced by a realization that other key industries, such as automobiles, ship-building and heavy equipment, are dependent on competitively priced supplies of steel. Attempts to raise raw material prices face vigorous opposition, as Canadian exporters will attest.

7.1

The Commodity Industries sector accounts for a significant portion of employment in Canada's industrial portfolio



Total Employment
in manufacturing was 1,660,000

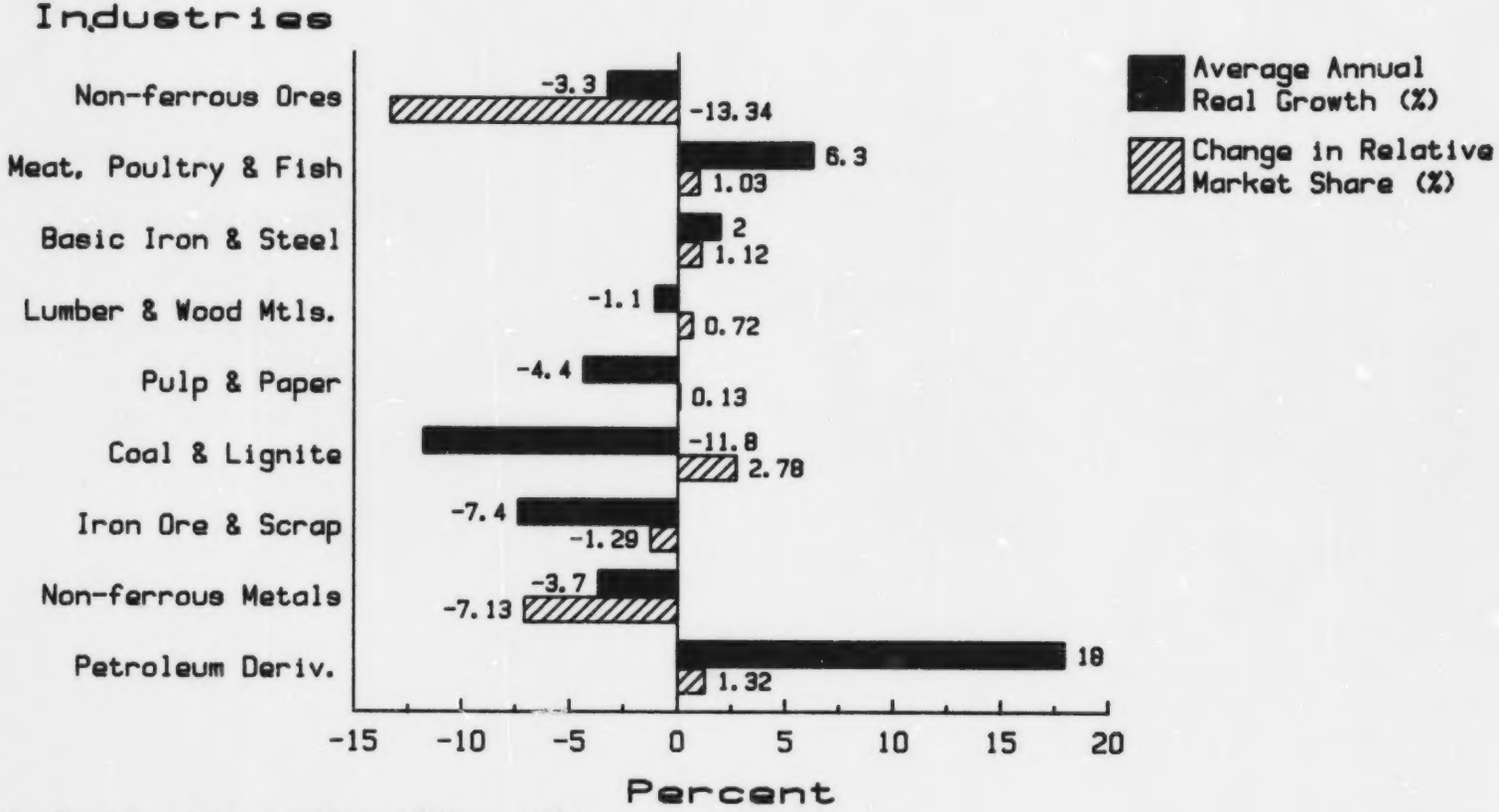
Commondity Sector
employment was 410,000

All employment figures
are annual averages

Canada
1976 - 1981

7.2

Declining markets and/or competitive positions are found in most of Canada's major commodity industries

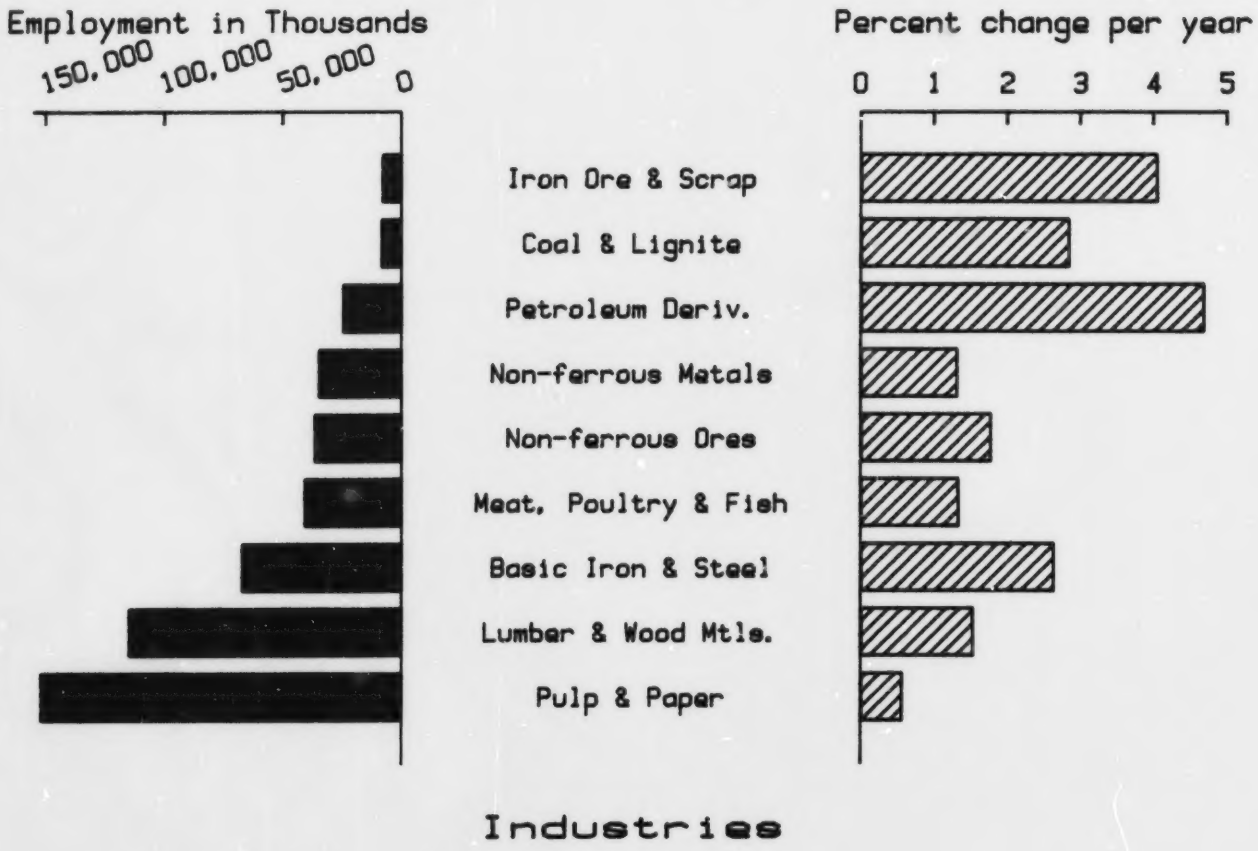


1. Growth rates are from 1976 to 1981
2. Relative Market Share change shows 1976-81 less 1971-76

Canada
1976 - 1981

7.3

Canada's forest products industries are major employers, although their employment growth is low



Commodity Sector

Canada
1976 - 1981

Canadian newsprint producers face a similarly monopsonistic market, this time in the United States. The major coordinating organization is the American Newspaper Publishers Association (ANPA), which has formed a sub-organization for the coordination of newsprint procurement. Additionally, various regional associations of newspaper publishers are also active in developing coordinated procurement strategies for newsprint. They include exchange of information among buyers, meetings to establish pricing policies, and occasional joint investments to encourage the development of new capacity in the supply system. The mechanisms these organizations have adopted are sanctioned by US law.

Other developments in the newsprint industry have strengthened the power of buyers. The American newspaper publishing industry has become progressively more concentrated, and major publishers now own chains of newspapers across the country. Each major chain is such a large customer that several newsprint mills are required to fulfil its needs. Buyers who are capable of absorbing the output of a number of mills are obviously quite powerful. When the resources of these buyers become available to an industry-wide buyer group such as the ANPA, it is clear that the Association can exercise a great deal of sway over newsprint suppliers.

Typically, newsprint mills are constrained in their choice of customer by logistical considerations to do with the high transportation component in the delivered cost of newsprint, which has a low value-to-weight ratio. In the newsprint industry, which has a zone pricing system in the United States, transportation costs are borne by the supplier. Therefore, each mill must sell largely to customers who are situated close by. Eastern Canadian producers sell mainly in the north-eastern and mid-western states, while producers in British Columbia sell mainly to states west of the Rockies. To sum up, these logistical considerations limit the flexibility of Canadian producers, further adding to the market power of their customers abroad.

Finally, for at least part of their requirements, several major American newsprint customers are "backward integrated" into the Canadian industry. Besides providing American customers with direct insights into the cost structure of their suppliers, partial backward integration reduces the risks that market power will develop in the supply side of the newsprint market. It also tends to turn the independent Canadian producer into a "swing" supplier, who will be cut off when demand for newsprint is low and then reinstated during a boom. The nature of long-term contracts in the newsprint industry eases this practice because their prices and delivery volumes are not binding on the purchasers. Rather like the case of the Japanese coal contracts, these contracts allow purchasers the leeway to adjust their supply terms to market conditions and to their own needs.

Although we could go on to describe the varied monopsonistic conditions that Canadian producers face in other raw material export markets, that is not the purpose of this study. Readers who may be sceptical should discuss this issue with senior managers from these industries who are familiar with the workings of their export markets. The picture that emerges for most commodity industries is that in each major importing country, the most powerful customers are few in number and are well coordinated when it comes to importing raw materials. The balance of market power lies with the customer, particularly when the supply system suffers from chronic overcapacity, as is the case in all the industries that belong to the Commodity Sector.

Policy Implications

We shall now explore the policy implications of this market structure. First, the crucial issue concerns the question of industrial capacity. It is vitally important that development of capacity does not run ahead of growth in demand. Overcapacity merely plays into the buyer's hands, because it creates market conditions in which buyers can play suppliers off against each other. New capacity should be developed only when demand conditions clearly warrant it, or when it replaces existing capacity that is removed for sound economic reasons, including depletion of the resource base in a particular location, aging plant, pollution problems, or a decline in demand for the particular products. Of course, Canada can do little when capacity is added in other countries.

If, instead, new capacity merely shifts demand from an existing plant to a new plant, the idled facility merely provides excess capacity that hangs like a pall over the market. If this idled capacity is brought back into production with governmental financial assistance, another existing supplier is displaced. And so on.

In assessing the severity of the impact of excess capacity on the Commodity Sector, it must be kept in mind that much of Canada's capacity is located in remote, single-industry towns, where alternative employment is scarce. Unemployment caused by excess capacity is severely disruptive in these places; the adjustment process is slow and painful. All these factors give rise to intense pressure on governments to come to the rescue by reopening the idled plants. But such short-run solutions merely dissipate the pressure and do nothing to tackle the underlying cause — excess capacity in the Canadian supply system.

Not infrequently, federal and provincial policies are responsible for creating excess capacity in the first place. Canadian resource industries have been targets of those economic development programs that have looked to resource-based projects to create employment and growth in remote areas. From a strictly local perspective, these projects look attractive. Unexploited resources in economically depressed areas come to the attention of local politicians and bureaucrats charged with implementing programs to help economically disadvantaged regions. It is not difficult to find customers abroad who will support these projects by guaranteeing long-term contracts, technical expertise and modest financial assistance.

As a momentum builds, it becomes easy to accept overly optimistic projections of demand. The inherently cyclical nature of markets for these commodities compounds the problem of assessing demand because it is easy to mistake a cyclical upturn for long-term secular growth. Those who argue otherwise are thought to be too pessimistic, and their words of caution are swept away. Operators of existing capacity are accused of self-interest when they issue warnings about the dangers of overcapacity.

Adroit customers can create a false sense of urgency, a "time-window," providing an opportunity that will be lost forever if major commitments to the project are not forthcoming. Such tactics are often successful, even though the project may take several years to complete. When it is finished and the promised increase in demand does not materialize, the industry finds itself saddled with expensive new capacity, heavily subsidized financing, and an array of expectations for new jobs, economic growth and prosperity in an economically depressed region. Whatever the costs, it is argued, the project must be made to work, even though older capacity elsewhere in Canada is underused or left idle.

The problem of government-induced capacity development is particularly difficult for provincial governments. Gains from a new project in one province often come at the expense of industrial firms in other provinces. Furthermore, if the project receives substantial federal subsidies, the province may not be called upon to bear a great deal of the cost. From a provincial viewpoint, a project that creates excess capacity in other provinces has a very attractive cost-benefit ratio. A provincial government that is alive to the needs of its electorate can hardly be expected to adopt a statesmanlike posture of looking after the interests of other provinces.

Recommended Strategy

The institutions that can best articulate and defend the national interest in such cases are the federal government and a national association of the industry in question. The federal government has to develop and sustain the capacity to provide effective industrial leadership. It must have an organizational structure which supports this effort, and, most importantly, it has to find the political will to define the national interest in each industry, and to defend it against developments championed by provincial or local interests when these conflict with the national interest.

It has to be recognized that economic development prospects in the Commodity Sector are not great. Despite the vast untapped natural resources in many parts of Canada, opportunities for profitable exploitation will be few and far between. Canada's existing capacity for resource exploitation will be more than adequate in most cases; in almost every case, incremental expansion of existing capacity will prove more economical than developing new capacity.

In those few cases where new capacity may be warranted, a difficult distributional problem has to be tackled. Each province where there are unexploited resources for the industry in question will vie for the new capacity. The federal government's role is to referee this interprovincial competition and ensure the orderly allocation of new capacity opportunities to the competing provinces. A great deal of political skill is needed to trade off opportunities in different industries against competing demands, in order to ensure that provincial competition does not have a destructive effect on national competitiveness.

Strategy Implementation

The most important single step that the federal government can take is to stop providing financial support for capacity development in the Commodity Sector. This will alleviate part of the perverse nature of the cost-benefit incentives for provincial governments. When new capacity is proposed, the private sector should finance it. That such private sector financial support is scarce or non-existent for most capacity-enhancing ventures in the Commodity Sector is strong evidence that private markets do not believe that new capacity makes sense. This should be recognized as a sound market signal, and not regarded as evidence of a market imperfection. If a provincial government decides to subsidize new capacity without federal financial support, that government will have to answer to its own voters.

The second step that the federal government should take is an organizational one. It must ensure that the governmental sub-unit that deals with the industry is capable of developing a long-term memory. The course of development in the commodity industries spans decades, not years. Certain decisions taken five and ten years ago are only now beginning to make a significant impact. Capacity expansions frequently take four to seven years to come to full production. Most importantly, mistakes made many years ago are only now being recognized. It is quite unreasonable to expect that officials and ministers who remain at a particular assignment for a few years or even a few months before they move on to different jobs will be able to develop the long-term memory needed to define and defend the national interest in the Commodity Sector.

What is required is an Industry Bureau approach, with one bureau for each of the nine industries in this sector. Each bureau should be staffed by a senior management group, who will be expected to remain with it for a long time — say ten years. It is essential that the bureau chief and the deputy chief must commit themselves to a ten-year term of office. The bureaux need not be large; indeed, large staffs are likely to be counterproductive. They should be staffed by highly qualified personnel, who are willing to remain in the bureau for at least five years (this may even be a condition of their appointment).

The Industry Bureau should serve as the arm of the federal government by being the focus of policy formulation and the instrument of policy implementation with respect to one industry, fairly narrowly defined. It should be the federal government's main point of contact with both the industry and the provincial governments. A representative of the bureau should be attached to the trade section of Canadian embassies in each major importing country, exchanging information with the host government and the industry's principal customers. Representatives should be rotated from the bureau's permanent staff and should be expected to take advantage of their assignments to augment their knowledge of the industry.

A major aspect of policy formulation will be the evaluation of new capacity proposals. Each major new project should be studied exhaustively. In particular, market opportunities must be investigated, always in the context of the industry's global demand/supply balance. The federal government should release a published evaluation of the new project. This should be prepared by the bureau, but it would have to be approved by the appropriate minister or cabinet before its release. While the federal government should not provide financial subsidies to new capacity projects, expenditure may be justified for infrastructure development, provided that the financial terms are equivalent to those available for existing capacity.

The bureau's other major role will be to help the industry cope with the monopsonistic structure of export markets. The only effective counter to monopsony is to develop monopolistic coordination at the supply end of the market. Unless sellers combine to present an united front in negotiations, monopsonized buyers will be able to develop and exercise a great deal of power in the marketplace. One major problem for buyers who band together is that they may be prosecuted under anti-combines legislation. It will therefore be necessary to strengthen the current legal arrangements so that seller coordination for the purposes of export marketing is excluded from the requirements of competition policy aimed at the domestic market. The bureau can provide a federal governmental umbrella under which coordination will take place. A lot of care will have to be taken to avoid the problems experienced by Canadian uranium producers when the federal government attempted to organize a cartel for that industry. Secret meetings and shadowy figures operating behind the scenes might alarm one's trading partners. The bureau's coordination efforts must be seen to be above board. They should form part of a larger framework of policy for the industry and should not appear to be ad hoc and arbitrary. They should create the impression that they are undertaken by knowledgable officials executing a formally approved government strategy for the industry.

An effective industry association is essential for the smooth functioning of business-government relations. Here, too, long tenure in key positions is essential to provide the proper long-term perspective. The head of the industry association should be the president or chairman of a major firm in that industry, who is willing to serve in this capacity for at least five years. Given the key role that the associations can play in the industry's strategic health, it is entirely appropriate for a major firm to expect its top executives to devote a substantial portion of their time to its affairs. This has indeed become an accepted practice in the United States, where chief executive officers of large firms are expected to commit a great deal of their time to matters concerning the industry as a whole. The association's permanent staff should also be qualified personnel, who are willing to serve a long tenure and to play important roles in policy development and execution. The association should arrange the negotiations with customers abroad and be responsible for upholding the industry's presence in the international marketplace.

One of the association's key jobs should be to collect and disseminate market intelligence. It may require the bureau's assistance to gain access to government data banks. It is important that access to the intelligence data base should be made available to all members and to all levels of government in Canada. Other devices should also be pursued to enhance the association members' understanding of market forces. Annual conferences, regular management meetings, newsletters, and so on, should all be used to disseminate information about the market. Collection, analysis and distribution of market intelligence needs to be pursued with a nearly obsessive zeal because superior information eventually leads to superior bargaining capacity. Some industry associations in Canada provide useful information, but there is an unfortunate tendency to avoid vital areas, such as prices, contract terms and market share data, partly because the associations are nervous about violating anti-combines laws and partly because such data are considered to be proprietary. Too often, the information function is restricted to non-controversial and even trivial issues.

To summarize, the proposed strategy for the Commodity Sector should concentrate on economic efficiency goals, rather than to use the industry as a means of achieving distributional objectives. It calls for a combination of a "hands-on" and "hands-off" policy, with the federal government playing a major role in key strategic areas. This role should be undertaken by industry bureaux, especially structured to participate effectively in the formulation and implementation of a long-term strategy for the industry. But this should not include federal subsidies of capacity expansion programs, which should be financed by private markets. Federal funds should be limited to supporting infrastructure and technological development.

Chapter 8
A STRATEGY FOR THE SUNSET SECTOR

The Sunset Sector consists of eight Canadian industries that face declining demand for their products or that are becoming less able to compete with similar industries abroad (these industries are listed in Figure 8.1). The cost of labour is a major issue in the Sunset Sector. Canadian wage rates are high, reflecting the country's relative affluence. For this reason, Canadian firms in labour-intensive industries are often at a cost disadvantage with firms in low-wage countries. To some extent, this disadvantage may be offset by productivity differences and by adopting more capital-intensive production processes. However, this does not overcome the cost advantage that occurs when foreign competitors use low-wage labour in those industries that comprise the Sunset Sector.

Strategic Issues

Recent developments in international markets have had a significant impact on Sunset Sector industries. First, several low-wage countries have adopted a Japanese-like strategy of export-led industrial growth, based on their comparative advantages of low-cost labour. Most prominent among these countries are Taiwan, Hong Kong, South Korea and Singapore. Their economies have expanded rapidly under national strategies that emphasize growth above all else. Wage rates are low, especially when compared with Canada. But productivity levels in these industries are high, partly because of the strong work ethic of their labour forces but also because all four countries have relatively modern production systems. The technology of their industries is relatively mature and freely available. In many cases, these Asian countries have acquired their production equipment and technology from Japan, which is in the process of getting out of these Sunset Sector industries. In fact, Japanese firms are actively transferring domestic production to these four countries because they have lower wage rates than those demanded by the Japanese labour force. The Japanese have a term for this process; they call it the "reverse boomerang" process of changing trade patterns (Akimori, 1976), in recognition of the fact that Japan is now a net importer of the very products that were important export items in the early years of its economic development. Exports from these "new Japans" are becoming well established in major international markets. Initially, product quality was poor, and the major selling tool was cheap prices. But as these countries gain experience, the quality of their goods is improving, just as it did in Japan's case. Prices remain low as productivity improvements offset wage-rate increases. With low prices and better quality goods, these four Asian countries have become formidable competitors.

Other developing countries are also active in the Sunset Sector. Mexico and Brazil have made major inroads into these markets. Though their labour forces are not as productive as those of the fast developing Asian countries, the low wage levels in Mexico and Brazil makes them cost-competitive. Moreover, their high inflation rates are offset by regular currency devaluations and programs of incentives to foster exports. Another noteworthy fact is that the pervasive influence of American customs and culture in these countries have given exporters an understanding of style and design trends that are popular in North America. This responsiveness to market trends has enhanced their competitiveness.

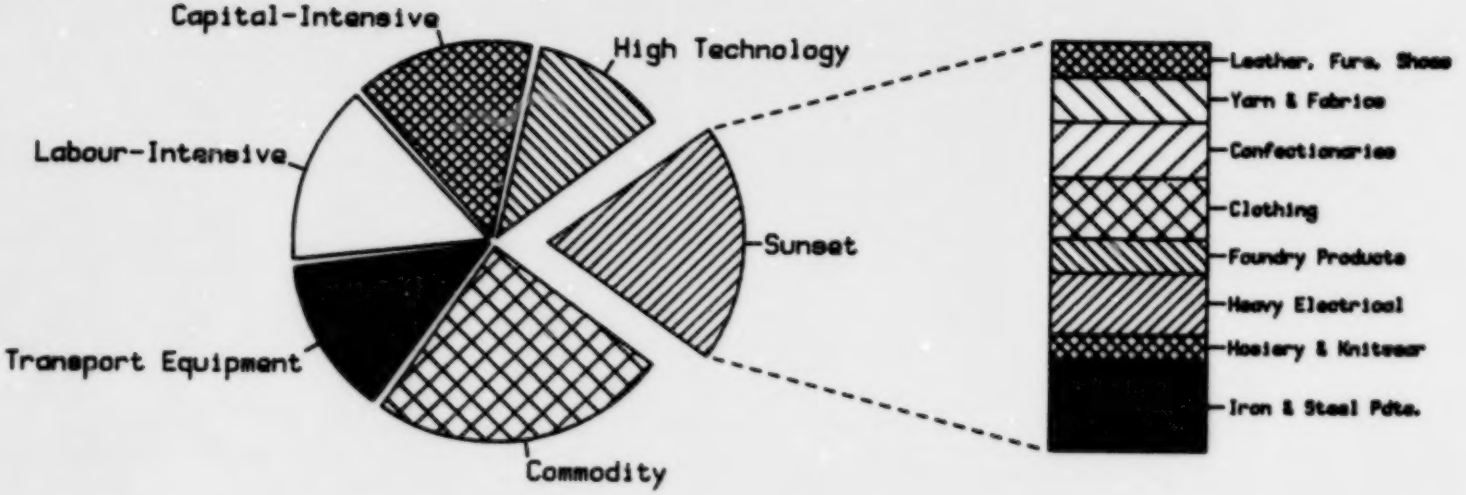
In Canada, manufacturers in the Sunset Sector face a number of problems besides labour costs. Many firms in this sector are relatively small compared with manufacturers in other sectors. They are also small compared with firms in the wholesale and retail sectors, which are more concentrated than industries in the Sunset Sector. The balance of market power frequently lies with these large buyers, who are also well organized to tap external sources of supply.

Yet the competitive picture is not uniformly bleak. There are firms that have found ways of overcoming the disadvantages. In some cases, innovative use of new materials and new technologies has led to the development of new products, whose sales are growing despite declining domestic sales of other firms in the industry. Some firms have developed successful strategies based on styling, design features and advertising. And, finally, some companies have turned to specialization strategies, manufacturing part of their product range in Canada and importing the rest from low-wage countries.

The major issue of public policy for the Sunset Sector is employment. Figure 8.1 displays the sector's contribution to manufacturing employment. As these industries lose ground to imports, jobs disappear. Many of the plants suffering from shrinking employment are located in small towns in Quebec and Ontario, where alternative employment is hard to find. Besides, they are not situated close to other kinds of manufacturing, and the service sectors in these towns generally suffer when manufacturing employment declines because the loss of wages means that workers are less able to spend money on services. Usually, these towns are dependent on one or two Sunset Sector industries. Their entire economic system is thus in a state of decay.

8.1

The Sunset Industries have a significant impact on total employment in manufacturing



Total Manufacturing Employment
was 1,660,000

Total Sector employment
was 334,000

Employment figures are
annual averages for 1976-1981

Canada
1976 - 1981

The plight of these decaying centres of small-scale manufacturing is similar to that of the many small towns in New England which went through the same cycle prior to World War II. Once prosperous centres for secondary manufacturing in labour-intensive industries, these towns witnessed a long period of decline as their markets were captured by firms in low-wage states in the American South and by imports from low-wage countries.

The employment problems of the New England states were eventually solved by a growth in high technology manufacturing. New England is now a major centre for defence and computer manufacturing and for other high technology industries. These industries grew rapidly after World War II. The Korean and Vietnam wars gave rise to sustained increases in defence production, and the recent build-up of military hardware by the Reagan administration has led to further demand.

Technology developed under contract with the US military has been put to use to create products for the civilian market as well. Jet engine technology, created to power fighters and bombers, enabled United Technologies to establish a pre-eminent position in the commercial airliner market. Hundreds of electronic firms in New England have established profitable lines of business, selling civilian derivatives of their military products; and the computer industry has been a substantial beneficiary of defence spending, developing new components and semiconductor devices. Almost without exception, successful high technology firms are active defence contractors — a competitive imperative in a majority of high technology industries.

Substantial R&D costs are paid for by the Pentagon, which even underwrites some of the non-defence-related R&D expenses of its contractors. Equally important are the advantages gained from early production experience under these defence contracts. Defence contractors gain scale-and-experience cost advantages from their military production; these reductions in unit costs make them formidable competitors in civilian markets. It is clear from the above that the entry of New England's high technology manufacturers into civilian markets has therefore been heavily subsidized.

Few Canadian-based firms have access to this level of subsidy. As was indicated earlier, Canadian defence expenditures account for a smaller share of GNP than US defence budgets, and the absolute size of the Canadian defence budget is naturally small because of the country's relatively small population base. Therefore, a defence-cum-civilian high technology sector, of the kind found in New England, has not been established in Canada. The consequence is that replacement of labour-intensive secondary manufacturing jobs by well-paying jobs in high technology industries has not occurred. Secondary manufacturing areas in central Canada continue to resemble the New England towns of a quarter-of-a-century ago.

Many younger people have left these decaying Canadian towns because they simply cannot find jobs there. But emigration is less practical for older workers, particularly those whose major asset is their equity in a house for which there is no market. The loss of jobs brings great suffering and hardship. Many of these workers are past the age when they can learn new skills. Even if they were retrained, they would have to move elsewhere to find employment, but jobs are just not available in the stagflation economy of the mid-1980s.

Governments, sensitive to the plight of these displaced workers, have pursued two major types of policy. One involves providing "temporary" protection from import competition by tariffs and quotas. These measures have slowed down the rate of decline of the Sunset Sector industries and have had the effect of subsidizing the preservation of employment through higher consumer prices. The cost of these programs is buried in the millions of purchases made by individual consumers.

The second policy involves direct assistance to firms to help them modernize and adjust. These policies are usually of a "hands-on" nature, with government intervening directly on a case-by-case basis. Almost universally, this takes the form of financial subsidies — grants, low interest loans, loan guarantees, and the like — to firms that have experienced business setbacks and are in danger of closing.

It is our contention that most of these latter policies have not worked. The fundamental strategic problem of labour-intensive secondary manufacturing is high cost of wages. Productivity and increasing capital intensity may overcome some wage rate differentials, but they cannot make up for the differences between Canadian wages and those obtaining in the fast developing Asian countries and in the developing nations of the third world. Pouring subsidized capital into an inefficient, labour-intensive Canadian firm merely converts it into a more capital-intensive, inefficient firm. Not only is the return on subsidized capital below its opportunity costs, but the firm now has less need of employees. This defeats the very objective for which the subsidy was made available — job preservation. Furthermore, the firm now faces a much greater financial risk; its debt burden has increased. And it has adopted a production technology with a higher level of fixed costs — its operating leverage has increased, making it riskier. Probabilities of bankruptcy are now much higher for the firm, again defeating the program's job preservation objectives.

Additionally, "hands-on" financial subsidies create incentives for third parties and unscrupulous owners to "rip off" the system. Subsidized capital can be used to replace debt from commercial financial institutions, to pay large management and brokerage fees, and to subsidize the lifestyles of those who have learned how to work the system. Since such programs are expected to have a high failure rate, it becomes difficult to distinguish between business failure and the misuse of funds. Equipment

vendors, consultants, lawyers and accountants do well out of such programs, but every leakage results in less money being available for the preservation of jobs.

Recommended Strategy

We therefore recommend a change in government strategy towards the Sunset Sector in order to preserve the jobs of those who are currently employed in its industries. This strategy should recognize that many of these workers have passed the middle of their work life. When they reach natural retirement, they should not be replaced. In other words, the strategy deliberately creates market conditions that will lead to an orderly contraction of employment in those industries, eventually resulting in a plant's closure. Since Canada no longer has any competitive advantage in these industries, no amount of government effort is likely to enable firms to regain the ground that has been lost.

Thus, the major goal orientation of government strategy towards the Sunset Sector should be distributional. Its intention should be to provide workers in these industries with an opportunity to share in general Canadian prosperity.

The major instruments of this strategy should be "hands-off" policies; government should not become involved in case-by-case efforts to bolster individual firms. Rather the role of government is to preserve markets for a transitional period until the current workforce has retired. The major policy instruments that should be used are tariffs, quotas and negotiated voluntary restraint treaties with supplying countries. Programs such as the Multifibre Arrangement under the General Agreement on Tariffs and Trade (GATT) are also appropriate. The thrust of all these programs should be to restrict the impact of imports to a level where the jobs of currently employed workers are preserved until they retire. All these arrangements should have clearly defined sunset provisions and an orderly progression towards that objective.

There should be no financial subsidization of firms in this sector. No efforts should be expended to make companies more capital-intensive. Rather, they should be encouraged to run down their stock of physical capital and to plan for a gradual contraction of production. The capital investment decision should be left strictly to the private sector.

Some firms with innovative strategies and good management will emerge from this period of transition in a strongly competitive position. In effect, they will move from the bottom left-hand quadrant to the bottom right-hand quadrant. When the period of transition is over, they will be strong enough to survive without protective tariffs. Picking these winners at the outset is difficult, if not impossible, because there are few observable differences between them and the losers. Therefore, it is not possible to devise a set of government policies to help these potential winners with "hands-on" assistance.

Some infrastructure-like role for the government may be appropriate. Projects such as technology centres, marketing training, design centres, fashion schools, exhibitions and conventions could be given financial support, to build up the human capital of these industries. They should, however, be operated on a general industry basis, with no effort to involve the government in case-by-case decision-making about individual firms.

Strategy Implementation

The federal government does not require an elaborate new bureaucracy to implement a strategy whose major activity will be negotiation and maintenance of import-restricting arrangements. The GATT system will have to be dealt with, but the government already has an organization for doing this. Existing financial subsidization programs should be dismantled. A small policy group may be needed to articulate the strategy and explain it to Canada's trading partners. Once developed, the policies for implementing the strategy should be continued with little change.

Stability of the policy environment is important to ensure that transition remains orderly.

In developing import-restricting arrangements, Canada should follow the lead of the United States whenever possible. Under the current wave of protectionism, the US is developing new arrangements with its trading partners in low-wage countries. The Multifibre Arrangement is a case in point. With its very large domestic market, the United States has a lot of bargaining power with its trading partners. The patterns of these new arrangements could be quite beneficial to Canada, if this country can negotiate similar deals. In fact, it may be advantageous for Canada to seek an arrangement with its neighbours for joint negotiations with the low-wage countries, with the United States taking a leading role. It should be stressed that the objectives of these arrangements are orderly transition and not permanent exclusion from the North American market.

To summarize: the strategy for the Sunset Sector should be a "hands-off" approach, with a heavy emphasis on distributional goals. The central objective should be to preserve jobs for existing workers until their retirement. The main tools should be import-restricting arrangements, with a specific timetable for termination. This is not a strategy to allow firms to adjust. Rather, it is one that recognizes that Canada no longer has competitive advantage in the Sunset Sector. Direct federal financial subsidies to specific firms should be avoided at all costs.

Chapter 9
A STRATEGY FOR THE HIGH TECHNOLOGY SECTOR

High technology is glamorous. People instinctively believe that these industries are the wave of the future. In particular, an implicit hope appears to be abroad that a New England-style transformation from labour-intensive industry to high technology industry is the answer to Canada's unemployment problem.

Strategic Issues

Yet the reality of high technology manufacturing is very different from its popular image. First, there are two very different types of jobs in this sector of the economy. One involves development work and short, highly specialized production runs. This kind of work requires highly developed skills and is consequently well paid. Because such skills are in short supply, there are plenty of employment opportunities from which to pick. Lifestyle becomes an important factor in choosing a job, as can be seen in the growth of high technology centres in California's Silicon Valley, Florida, Colorado, and the greater Boston area.

The other type of job in high technology industries involves high-volume production work for articles that have gained widespread acceptance in the marketplace. This kind of work requires little skill beyond manual dexterity and a high tolerance for boredom, and firms prefer to pay low wages to those who do it. The number of people in this second kind of job in high technology industries far outweighs the number of well-paid, highly skilled personnel who also work in high technology. And so the growth in the industry is with relatively low-skill jobs.

High technology industries tend to bifurcate the location of activity along similar lines. The skilled jobs are to be found in centres where a lot of technically proficient workers are available. This limits the choice in the United States to about six locations, but in Canada, very few possibilities exist for most hi-tech industries. Since these jobs are knowledge-intensive, plants are best located near centres of research and scholarship, such as universities or large government research laboratories.

The other side of high technology industry — that part concerned with long production runs — is usually located in low-wage, low-overhead areas. Frequently, overseas locations are favoured because of the large pools of highly disciplined, low-wage rate labour available there. For example, the fast-developing South-East Asian countries are the most preferred sites for electronic assembly plants.

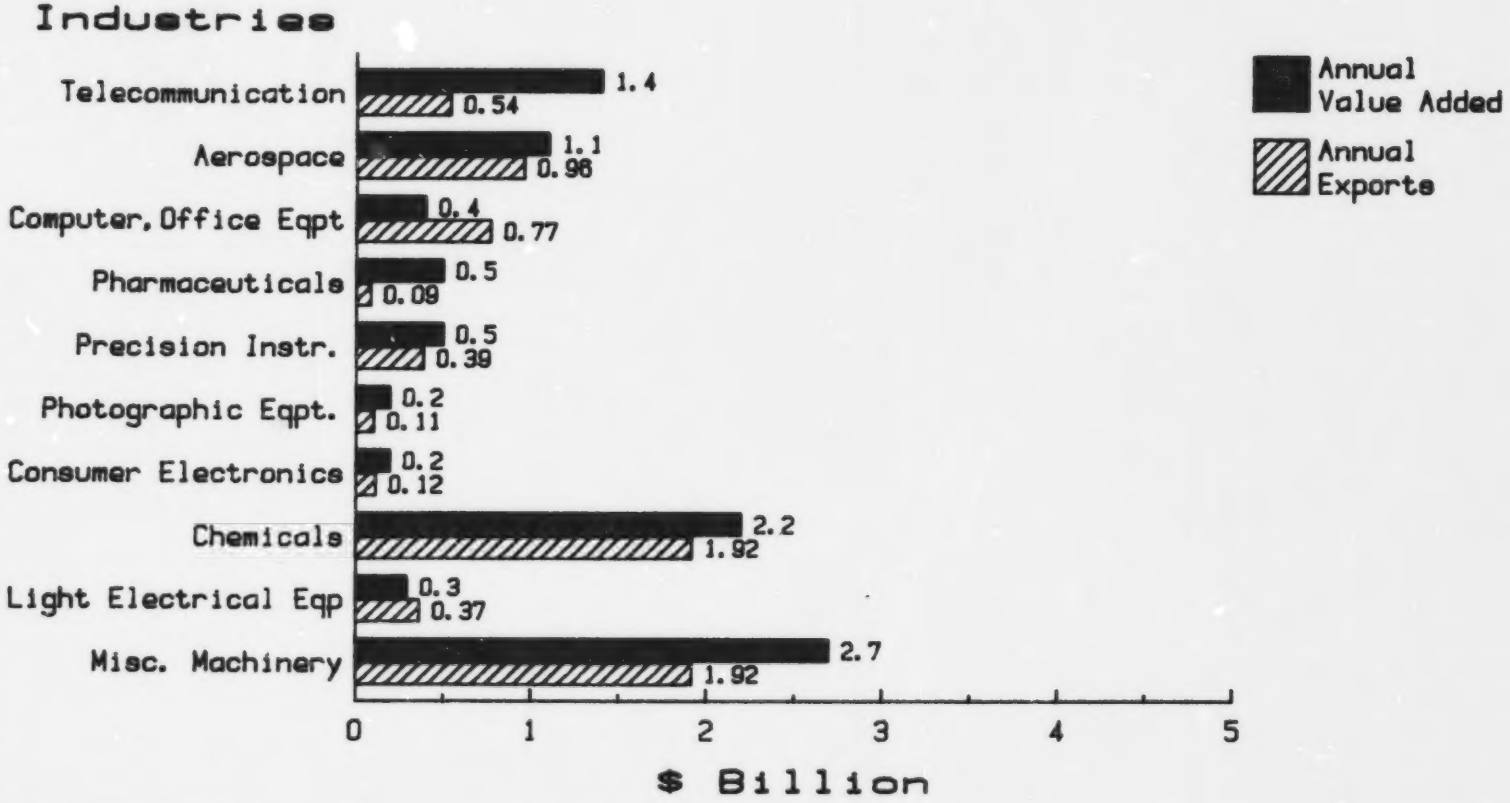
It is clear that the growth of high technology industries does not always provide large-scale employment opportunities in the developed countries. It does provide growth in a limited number of very well-paying jobs that require particular and scarce skills. When sales of a product line increase to the stage where large-scale employment is in the offing, high technology industries tend to shift production overseas. Firms that do not do this are, competitively, at a severe disadvantage.

This pattern is more typical of some high technology industries than others. Defence-related high technology production is almost never moved overseas. Neither is high-volume production in industries, such as aerospace, where specialized labour skills are needed. Finally, high technology industries that use capital-intensive production processes, requiring small numbers of highly skilled workers, have little incentive to move to low-wage countries. Witness the production of personal computers in Florida by IBM.

High technology industries do make substantial contributions to other national economic goals; they increase exports and growth in gross domestic product (see Figure 9.1) and are therefore considered desirable industries in the national portfolio, even though their potential for increasing employment is fairly modest. Let us examine the more important factors that lead to the successful development of these industries. First and foremost, of course, is research and development. By their very nature, these industries have to spend substantial and continuous sums of money on the search to develop new products and processes and improve existing ones. Research and development expenditures are fixed costs, incurred in advance of production and marketing. They are inherently risky because of the high operating leverage they create and because of the uncertain markets they serve.

9.1

High technology industries make significant contributions to value added and exports



1. Value added are annual avg. in $ 1971 Billion
2. Exports are annual avg. in $ 1981 Billion
3. Industries ranked by technological intensity

Canada
1976 - 1981

Three types of risk are incurred in the development process of high technology products. The first is product-risk — uncertainty about whether or not a product can be devised that can carry out the functions required of it. Most high technology products are required to meet demanding specifications in many different dimensions. Finding the right trade-offs to fulfil conflicting requirements simultaneously is difficult. The second risk — the "process" risk — is whether or not the new product can be produced at an acceptable cost. Thirdly, there are risks related to market factors. Will demand be sufficiently large? Will competitors be able to bring their product to market earlier? Will one's competitors price aggressively? Such "market risks" may render a technologically satisfactory product unattractive to an investor.

Figure 9.2 displays the typical risk pattern of the development of a new high technology product line. Risks are highest at the start, since the development project faces all three kinds of risks. When an acceptable prototype has been tested and has been certified by the government or by major customers, there are no longer major risks attached to the product itself. But process risks will be eliminated *only* after arrangements for volume production have been completed. Risks related to demand and the activity of one's competitors continue throughout the project's lifetime.

High technology firms have adopted a variety of strategies to cope with the severe risks inherent in the early part of the development cycle. One frequently used in US defence industries is to transfer all product risk to the government via an R&D contract. Development costs are then financed out of military budgets. Sometimes, process risks, too, are assumed by the military, who enter into cost-plus contracts with their defence suppliers. Market risks are considerably reduced in these programs because, once a firm has developed the product and its production processes under military, cost-plus contracts, it has a large technological lead over its competitors, even if the military chose to bid the procurement competitively.

Another risk reduction strategy is the *civilian derivative* approach described in Chapter 8. Here, the bulk of the product and process risks are absorbed by government in procurement of the military version. The firm bears the market risk for the civilian derivative only. Competitors who have not produced a military version of the products are at a strong competitive disadvantage because they have to cover all three risks by themselves.

Alternatively, one can try to eliminate market risk by finding a customer willing to place a large order for a new generation of product before development work commences. Frequently, only the government has large enough requirements to be able to do this. Under this strategy, the firm finances the concept development phase from its own resources, after which it begins negotiations for the sales contract. Concept development requires only modest expenditures, but once the sales agreement is signed, the firm has to spend large amounts of money on further development.

Another risk-reducing strategy is called *component commonality*. This involves developing components and sub-systems that are common across several different versions of a product or across a number of generations. By using components that are already being manufactured for other products, the firm reduces its exposure to product and process risk.

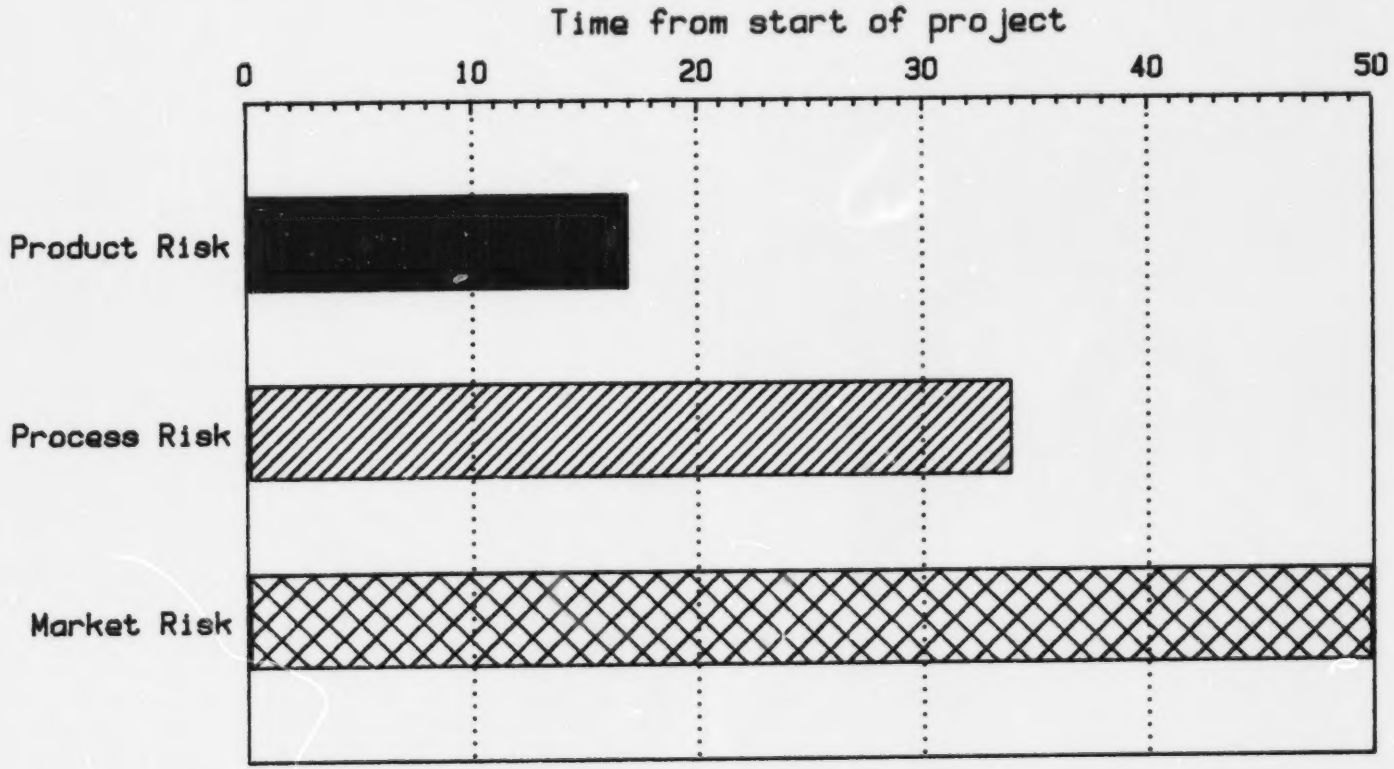
Of course, risks for an individual firm will be reduced if it shares its investment in product and process development with other firms, frequently from other countries. Alliances can be formed between firms to cover a particular project, a particular product range or a vertical segment of the market. These pacts often give the consortium preferential access to their own domestic markets. This reduces market risk for the consortium and allows the partners to concentrate on the product and process risks.

The second aspect of strategy for high technology industries derives from the interaction of market share and costs. Since these industries usually have steep experience curves, firms that develop cumulative experience early in the life cycle can establish cost advantages over their competitors, which are difficult to overcome as long as the firms maintain large relative market shares. Low costs permit the firm to price their product competitively and spend more on marketing it. Defence contracts give firms a definite competitive advantage in this regard. Production under military contracts provides early cumulative production experience, which in turn can be translated into unit cost advantages. When the times comes to launch a civilian derivative, the firm has an edge over those competitors that have no cumulative production experience. The latter rarely succeed in establishing a profitable position in civilian markets.

A different market-based strategy applies to products that have not been developed as civilian derivatives of military hardware. One tactic is to negotiate a sales contract with a customer who has large requirements and use that production opportunity to acquire cumulative experience. Another is to cover as wide a range of market segments as one can. Both approaches require that the firm establish a significant presence in a large market during the early stages of the products' life cycle. The United States has the largest domestic market for high technology products, and firms that have captured a large share of this market frequently end up with strong international competitive positions.

9.2

In high technology industries, risks are highest at the start of the development cycle and decline systematically thereafter



Given these competitive characteristics, it is hardly surprising that Canada has only a modest presence in the international markets for high technology products. Figure 9.3 shows the Relative Market Shares of the ten industries that make up the high technology sector of this study. Canada has a weak international position in nine of these industries. The chemical industry is the only exception, where competitive position depends on access to competitively priced feedstock. Over the entire period covered by Figure 9.3, 1976 to 1981, Canadian industry was a beneficiary of the federal government's policy to keep Canadian crude petroleum prices well below world price levels. The Canadian petrochemical industry consequently prospered. Export sales grew because Canadian-based producers were able to price aggressively, in effect passing on some of the implicit subsidy of low crude prices to their export customers. Since the basis of competitive strength of the Canadian chemical industry lay in its access to below-market price feedstock, the industry will run into trouble if this competitive advantage disappears. From the time that the difference between Canadian crude oil prices and world prices was nearly eliminated in 1983, the Canadian petrochemical industry has encountered serious problems in competing profitably in world markets.

The remaining high technology industries saw declines in their international competitive position during 1976-81, with the exception of photographic equipment, where a modest gain was achieved (see Figure 9.4). The position of the telecommunications equipment manufacturers has been discussed in Chapter 5. Similar problems plague most other high technology industries.

Recommended Strategy

The characteristics of high technology industries have important policy implications for Canada. First, it is unlikely that Canadian-based businesses will be able to compete for markets that are defence-related or where civilian products are derivatives of military products, given the small size of the country's defence budget. Therefore, those high technology initiatives most likely to succeed will involve civilian markets without large defence requirements. Second, it is important to penetrate the US market effectively during the early stages of the product's life cycle in order to establish cumulative volume. Here, Canadian subsidiaries of US multinationals may have a competitive advantage over Canadian-owned corporations because American corporations prefer to buy from US suppliers in fields of high technical uncertainty. Third, it may be necessary for the government to find ways of helping firms reduce their risks in the early development phase.

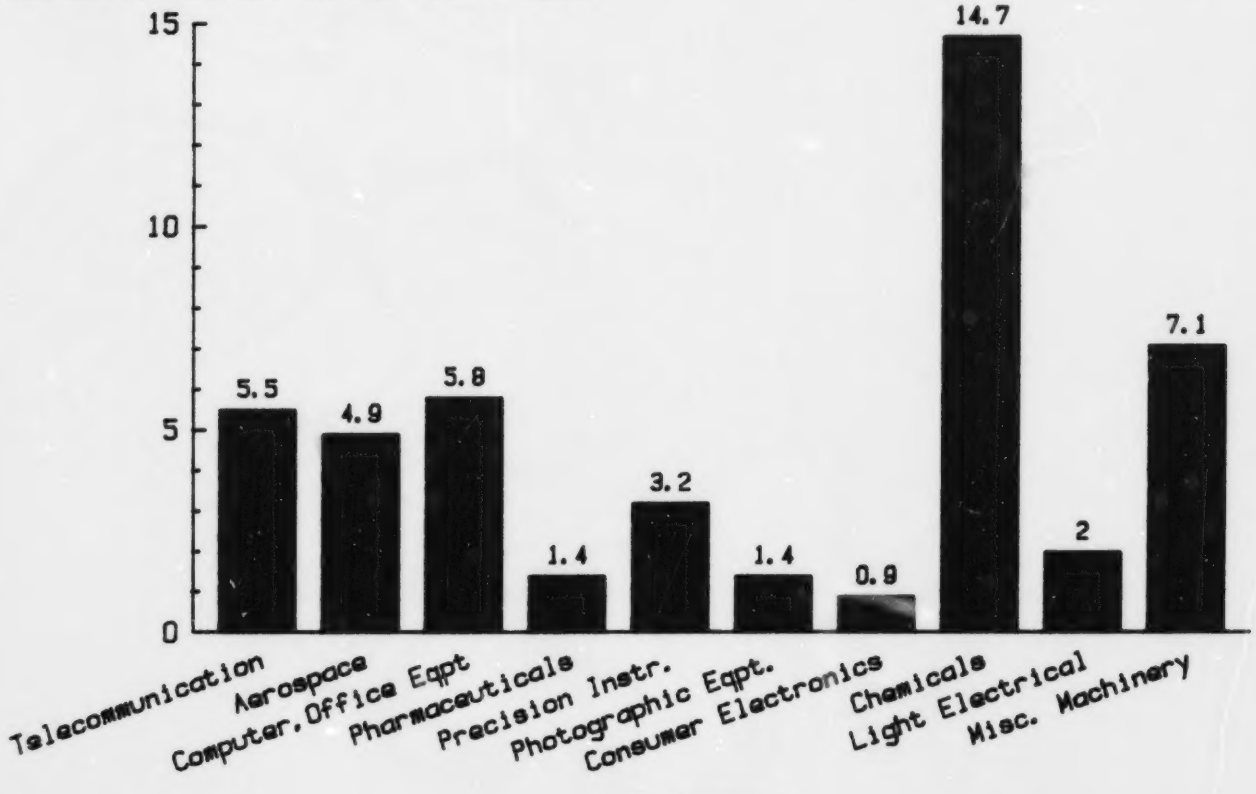
Risks may be reduced if substantial orders are placed in advance of development. In cases where the Canadian government sees a need for large-scale procurement of a new product, it may be able to assist a Canadian-based firm to gain a competitive lead. But since the Canadian market is small, the competitive advantage for a firm serving this small market will soon dissipate unless vigorous efforts are made right from the start to capture export markets. If the early products have been designed to fulfil technical requirements that are idiosyncratically Canadian, they will not be accepted in the export markets. Technical specifications that meet the needs of export markets have to be established right at the beginning. Since this will usually be the US market, Canada's metric program may have to be modified to allow for flexibility in the specifications of high technology products. In all this, it should be recognized that very few new products will have a large enough Canadian government requirement to provide a sufficient base for developing a strong competitive position.

In such cases, the second approach will be more appropriate: using financial incentives to share the risk in the early development stages. This is the civilian equivalent of a US-style military procurement program. In the latter case, the military underwrite the risk of product and process development, making it attractive for private firms. Similarly, in civilian programs, the government can provide financial assistance to share the risks during the early phase of a development program. In return, the government should negotiate royalty arrangements, to repay this assistance if the program becomes successful. The government thus is a financial partner in the program. The assistance is more in the nature of a venture capital investment than a subsidy, thus avoiding problems with the General Agreement on Tariffs and Trade (GATT).

The key to the success of these programs is to ensure that they are market-driven. There must be a clearly identified market demand for the proposed product, and there must be a credible marketing plan. Here, the private sector is much more capable of sound decision-making than the public sector. Recognizing and exploiting market opportunities comes naturally to private sector firms that are used to succeeding or failing by marketplace tests. Government organizations that are designed to meet their revenue needs by fiscal means are not structured to sell products and services profitably. The government's role should be reactive rather than proactive: private firms should be urged to come up with projects that the government can evaluate. Once a deal has been struck, its implementation should be left to the private sector, with government playing a monitoring, mainly "hands-off" role.

9.3

Weaknesses in the competitive position of Canadian high technology industries are a cause for concern

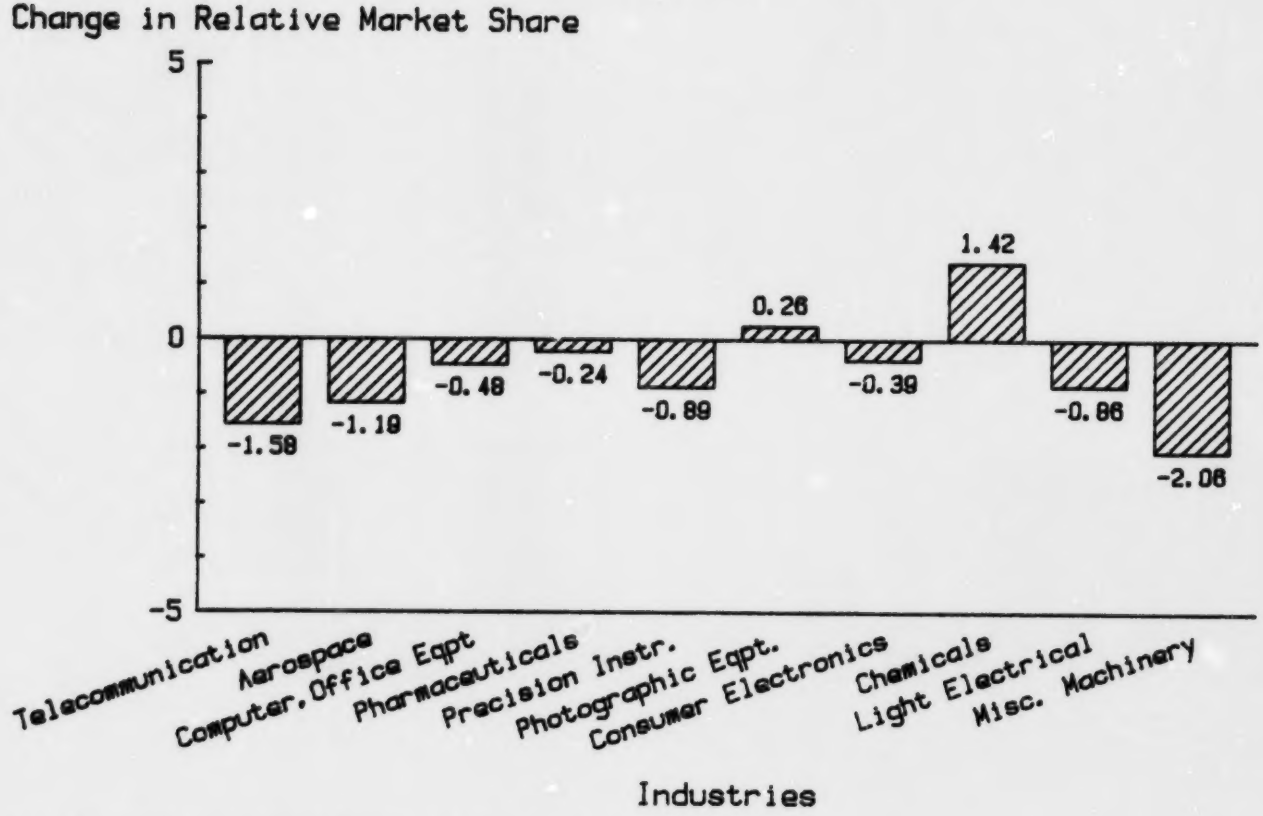


1. Industries ranked by technological intensity

Canada
1976 - 1981

9.4

The competitive position of most high technology industries deteriorated during 1976 - 1981



1. Industries ranked by technological intensity
2. Change in Relative Market Share shows 1976-81 average less 1971-76 average

Canada
1976 - 1981

It should be recognized that a bias in favour of Canadian-owned firms will prove unproductive. Since these projects are critically dependent on their marketing components, multinational firms with strong sales organizations in major foreign markets will be more effective. Only a handful of Canadian-owned high technology firms possess sufficient international marketing stature to achieve the kind of rapid market penetration that is essential for this strategy's success.

Strategy Implementation

The development of scale-efficient high technology projects will require a different structure within the federal government. Since these projects are large and complex, they will usually cross program lines. The interaction between program measures and R&D incentives in the income tax system is very important. Canada's Defence Production Sharing Agreement with the United States may be a useful tool to invoke for certain projects.

The most appropriate tool for dealing with the complexity of high technology projects is the Memorandum of Understanding (MOU) process. This provides a single umbrella for multi-faceted negotiations between the government and a corporation on all aspects of a large development project. The MOU process is inherently market-driven because it starts with a strategic assessment of market opportunities, to which the firm must be willing to commit substantial financial, human and knowledge resources. These opportunities are not defined by government planning bodies but by firms seeking a profitable niche in the marketplace.

Government's role is to be reactive and not proactive. It must assess, not initiate. The government officials who are assigned to develop the MOU with the individual firm must fully understand the market environment and then be able to define the national interest in the project.

A small, policy-orientated group with highly developed skills in strategic, market and financial analysis is the one best suited to negotiate. Because of the size of each project, decisions about the degree and kind of assistance will normally have to be made by government ministers or by the cabinet. Once the MOU is negotiated and translated into a definitive contract, its implementation should be left to the firm, with officials of the government playing a monitoring role.

Chapter 10
A STRATEGY FOR THE CAPITAL-INTENSIVE SECTOR

The Capital-Intensive Sector consists of fourteen Canadian industries that have high capital-to-labour ratios but are not technology-intensive. The latter fall into the High Technology Sector that was assessed in Chapter 9. The fourteen industries in the Capital-Intensive Sector accounted for $7.1 billion annual average value added in manufacturing during the 1976-81 period. Total average annual value added in manufacturing was $41 billion (see Figure 10.1). Many of these industries are in economic difficulty because of unfavourable productivity trends — measured by changes in value added per employee (see Figure 10.2).

Strategic Issues

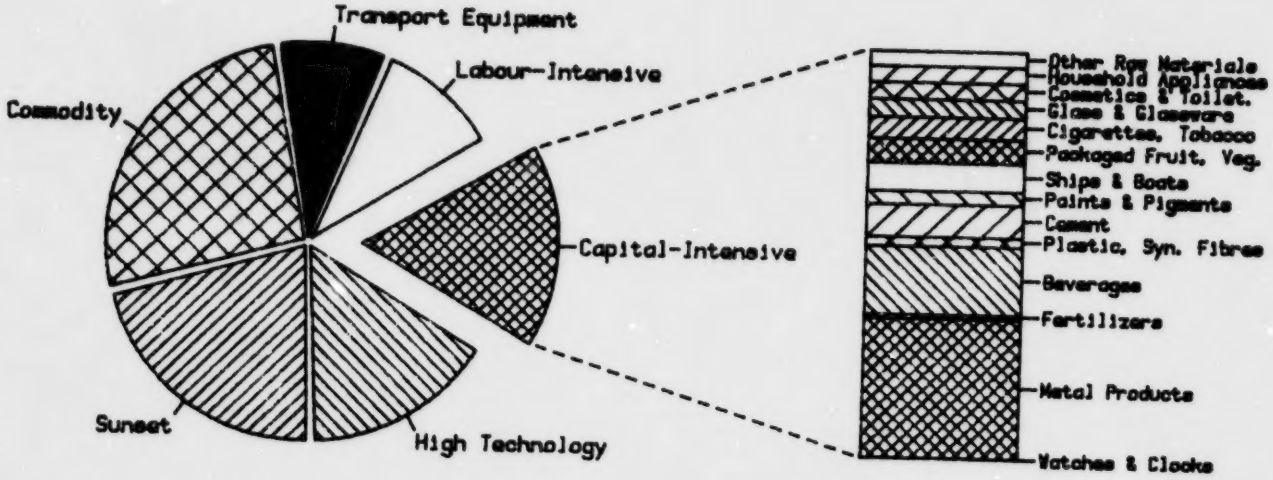
The success in capital-intensive industries is determined by scale economies and capacity utilization. For this reason, businesses in these sectors are highly volume-sensitive. Those that are able to maintain a high volume on a continuous basis are very profitable. If sales volumes fluctuate, profits too become volatile (this is a function of the high levels of debt leverage and operating leverage of most capital-intensive industries; they are inherently more risky than industries with lower leverage). Figure 10.1 demonstrates the characteristic high value added per employee of Canadian capital-intensive industries.

The Profit Impact of Marketing Strategy (PIMS) research program of the Strategy Planning Institute demonstrated that capital-intensive businesses with high Relative Market Share are more likely to be profitable than low-share businesses. In fact, on average, the latter were found to be more likely to incur losses than make profits. High Relative Market Share enables businesses to maintain high sales volumes; it confers a measure of market power on the business, which in turn is able to achieve a higher level of volume stability. Consequently, the business can work at close to peak capacity.

This market-share based strategy runs counter to the spirit of existing competition policy. Much of Canadian competition policy is motivated by economic welfare imperatives. The development and maintenance of a competitive structure is considered an "avenue for promoting efficiency in Canadian industry" (Bryan, 1982). Therefore, competition policy tries to thwart structural changes that effectively reduce the number of competitors and the vigour of competition in a given industry. This is to be accomplished primarily by preventing monopolistic combinations of competitors and collusion between existing competitors. Like its counterpart in the United States, Canadian competition law focusses its attention on the structural (concentration) and conduct (anti-competitive behaviour) aspects of industrial organization, presumably on the expectation that prices, profits and growth will occur, as the original industrial organizational theorists suggested. While there have been fewer successful prosecutions under Canadian anti-combines law, compared with Washington's well-publicized and successful efforts to implement American anti-trust law, it cannot be assumed that competition policy has no effect on the behaviour of large firms in Canada. On the contrary, the fear of being investigated is a real constraint on their behaviour and is taken into account in strategic decision-making. Therefore, the formal provisions of the legislation and the manner in which it is enforced have an impact on behaviour, regardless of the number of successful convictions.

When it is examined in a strategic framework, the assumptions and conclusions of competition policy are not as robust as economic analysts would have one believe. First, industrial organization propositions that relate cost and prices to the distribution of market shares among competitors (concentration ratios) are called into question by experience curve analysis. Since the latter holds that costs are a function of cumulative production experience, it follows that a concentrated market structure, in which the cumulative experience of a limited number of firms can grow rapidly, will lead to a low-cost industry. In other words, allowing a single competitor to gain a dominant share of the market could create conditions under which unit costs would be lower than when there are a large number of small share competitors, each with limited cumulative experience. The Canadian aluminum industry, with its concentrated structure and declining real costs, provides a good example. It has been shown that "attempts to enforce competition by deconcentration, implemented through explicit or implicit limits on market share, runs [*sic*] the risk of reducing the technical efficiency of industries with moderate learning curves" (Spence, 1981).

The Metal Products industry was significant in the Capital-Intensive sector during the 1966 - 71 period



Total Value Added
was $ 41 B

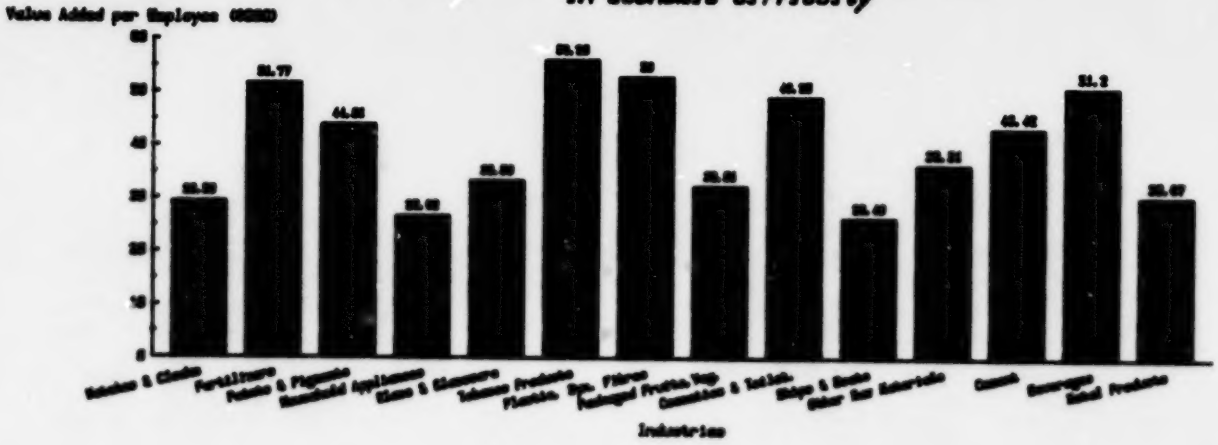
$ 7.1 B Average
Annual Value Added

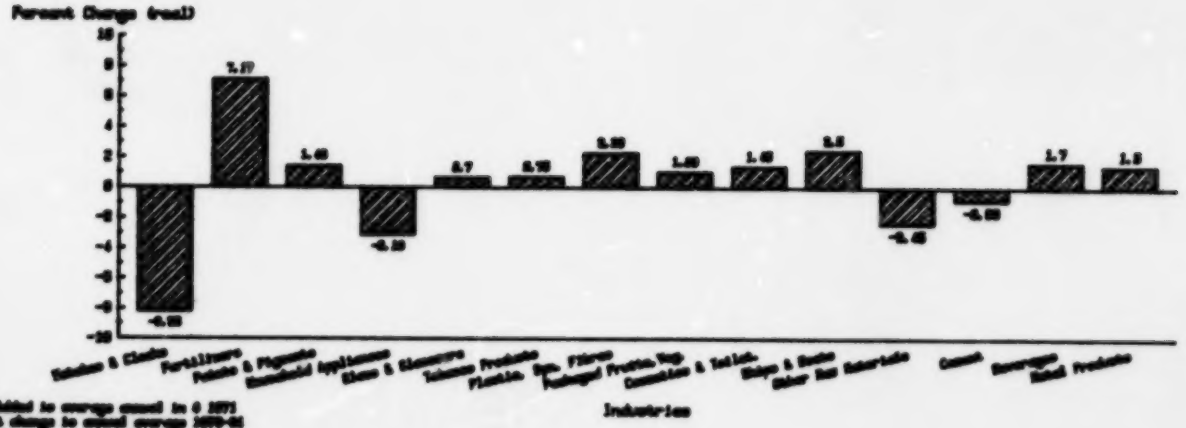
Growth in value added (4.4%) was less than the growth in the world markets (9.8%)

Canada
1966 - 1971

10.2

Unfavourable productivity trends distinguish capital intensive industries in economic difficulty





1. Value Added in average annual $ 1971
2. Percent change in annual average 1970-81
3. Ranked by growth in total value added

Canada
1970 - 1981

Clearly, opportunities for cost reductions through scale and experience should not be interpreted as evidence that the large share competitor will achieve cost reductions, or necessarily will be willing to translate cost reductions into price reductions. On the contrary, absolute cost advantages can act as barriers to entry, thus conferring monopolistic advantages on the large-share firm (Abell and Hammond, 1979). At some stage, opportunities to earn monopolistic profits outweigh the advantages of expanding volumes by charging competitive prices. Therefore, while an uncompetitive structure can lead to the development of superior technical efficiencies, the conduct of firms with cost advantages can also have undesirable features from a public policy perspective.

These unfortunate eventualities are, however, extremely unlikely to occur in a relatively small, open economy. Actual and potential competition from producers in other markets will constrain the ability of low-cost producers in Canada to charge monopolistic prices. As long as imports are not restricted by trade-distorting devices such as tariffs and quotas, competitive conditions will persist even in markets with high concentration. This is particularly true in capital-intensive industries.

Recommended Strategies

In such industries, rigid enforcement of competition policy, based on structural considerations, is likely to harm Canadian national interest. The survival of a business in these industries depends on its ability to reduce its costs as rapidly as its competitors in order to keep pace with continuously declining prices. Therefore, Canadian businesses must be able to build volume as rapidly as their competitors. In the early stages of product life cycles, domestic markets are the logical place to build sales volume. If Canadian-based producers are limited by competition policy to a non-dominant share of a small domestic market, they will not develop volume comparable to their competitors in larger markets such as the United States or Japan. At the very least, competition policy should not discourage high market shares for producers located in Canada. Proponents of experience curve strategies would go even further and recommend that high-share positions should be actively encouraged by Canadian public policy.

Another issue of some significance for capital-intensive industries is the definition of the relevant market for the determination of concentration ratios and market shares. If the industry in question is an international one, surely the relevant market is not the domestic market in Canada, but the entire world market that is open to trade. The vigour of competition in the Canadian market of a global industry is not dependent on the structure of the industry in Canada; rather, it is a function of global structure and the conduct of competitors, who see the whole world as a series of interdependent markets. Measurement of concentration ratios in Canada is not only meaningless; it can lead to erroneous conclusions. Assessing that a large-share producer who is based in Canada has monopolistic advantages may be inappropriate when competitors in other markets have significant volume advantages.

Similarly, industries that are rationalized on a North American basis cannot be analyzed in Canada on the basis of concentration of Canadian production. The largest-share producer in the Canadian market may well have an insignificant share of the North American market. If the industry's products can criss-cross the border with relatively few restrictions, it is more appropriate to examine the structure and conduct of the North American market than to focus solely on the Canadian.

To summarize: the appropriate national strategy for the Capital-Intensive Sector is to develop a special version of anti-combines legislation for these industries. It should be a stated aim of this policy to permit concentration. Where market share measurements are used to evaluate industrial structure, the relevant market should be North American or global in scope. The Canadian-based producers' shares of these larger markets should be the basis of deciding whether or not a concentrated structure exists.

Strategy Implementation

This policy will have to monitor closely the market behaviour of producers exempted from the anti-combines laws that apply to other sectors. In particular, prices charged in Canada should be compared regularly with international prices, to see whether monopolistic behaviour is harming Canadian customers. Of course, the best defence against this is to maintain as free an environment for imports as possible. Tariffs and non-tariff barriers should be eliminated or kept to a minimum. Free access to international sources of supply will protect consumers in the long run better than any bureaucratically operated system of price monitoring.

Chapter 11
A STRATEGY FOR THE LABOUR-INTENSIVE SECTOR

The Labour-Intensive Sector consists of seven industries that have a low capital-to-labour ratio but do not fall into the Sunset Sector. These are industries that can continue to compete effectively against firms in low-wage countries. Figure 11.1 shows that, during the 1976-81 period, the Labour-Intensive Sector accounted for an annual average of 252,000 jobs out of a total of 1,660,000 manufacturing sector jobs. Industries in this sector have potential for growth in value added and employment (see Figure 11.2).

Strategic Issues

Since labour costs constitute a high proportion of total costs in labour-intensive industries, controlling these costs is the key to success in this sub-sector. Smaller firms are able to control labour costs better than larger firms for several reasons. First, they are less likely to be unionized; their wage rates are therefore likely to be lower. Second, and this is equally important, they have more operational flexibility. Job assignments can be varied more easily to match workloads. Work rules are less rigid, and jurisdictional boundaries between trades are less restrictive.

Furthermore, smaller firms benefit from the more "hands-on" orientation of their owners and managers, who are close to operations and can detect inefficient labour practices fairly easily and act quickly to improve things.

Lastly, the workers themselves experience a greater sense of participation when the organizational unit is small. Large units are impersonal, and decisions are usually made several removes from operations. Because of their better understanding of how their company functions, workers in smaller firms can do more to make it efficient and well-run. In smaller companies, there is less likelihood that workers will become alienated and adversarial.

Recommended Strategies

Since the smaller firm has numerous advantages in the labour-intensive industries, strategies for this sector should concentrate on providing an environment in which small manufacturing firms can prosper. Yet there is another important reason for public policies that will encourage the growth of the small firm. Studies in the United States and Canada show that small firms account for a large proportion of job creation in the private sector (Birch, 1981). As the present study has maintained, job creation must be a key component of national economic strategy. Since the other sectors we have looked at so far are likely to experience only modest growth in employment over the next decade, the role of the smaller firm is critical if national employment objectives are to be achieved.

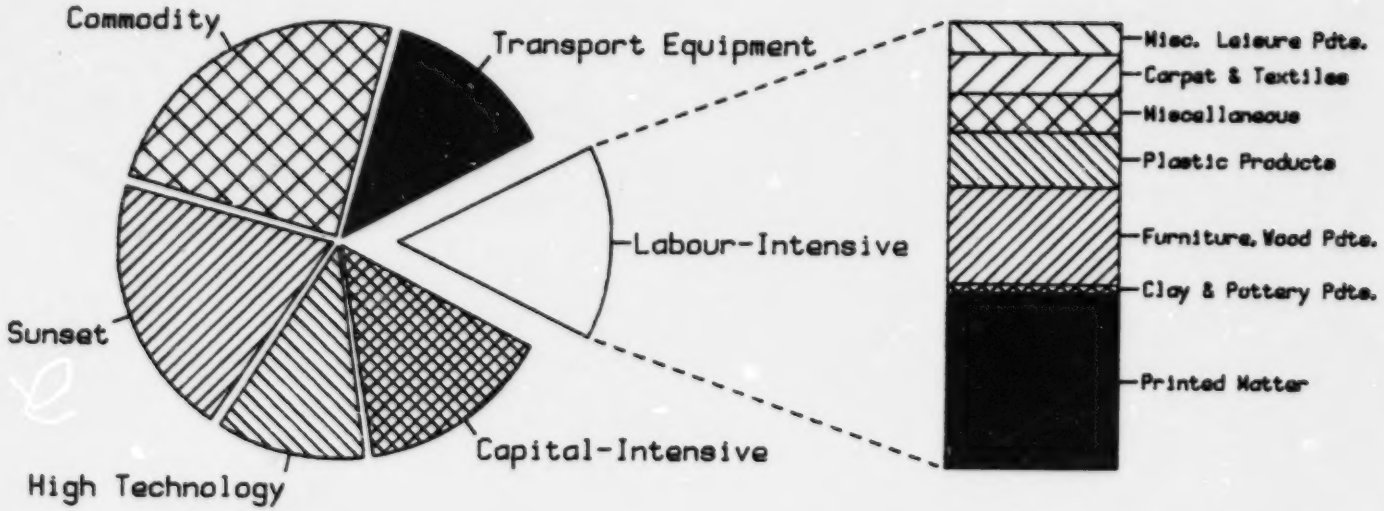
Two potent tools of public policy are available to assist the small firm. The first is tax policy. We recommend that federal corporate income taxes be eliminated for all manufacturing firms that employ fewer than 500 persons, provided that these firms keep their profits invested in the firm and do not pay dividends. This exemption should be restricted to firms that are not subsidiaries of other companies, so that large firms will not take advantage of the provision by forming small subsidiaries. Further, we recommend that owner-managers should not be liable for capital gains tax when they sell their shares, provided that they have owned them for at least ten years. These two provisions will create powerful incentives for owner-managers to plan for long-term growth and to reinvest profits in their companies.

Outside investors should be granted similar exemptions, provided that no dividends have been paid for ten years. This provision will go a long way towards enhancing the equity base of small firms, which currently suffer from severe undercapitalization and consequent high leverage ratios. Reducing cash outflows for taxes and dividends obviously will strengthen the cash flow position of small manufacturing firms.

Another major burden that small firms have to bear is imposed by federal regulations and paperwork. Although some improvements have been achieved in recent years to cut back the paperwork requested by government, a lot more needs to be done, particularly at the provincial level. Small firms suffer disproportionately because they cannot afford the specialized staff and systems needed to deal with the growing complexities of regulation. Large firms have access to scale economies that are simply not feasible for the small firm.

11.1

Labour intensive industries are not significant employers in Canada



Total Manufacturing Employment
was 1,660,000

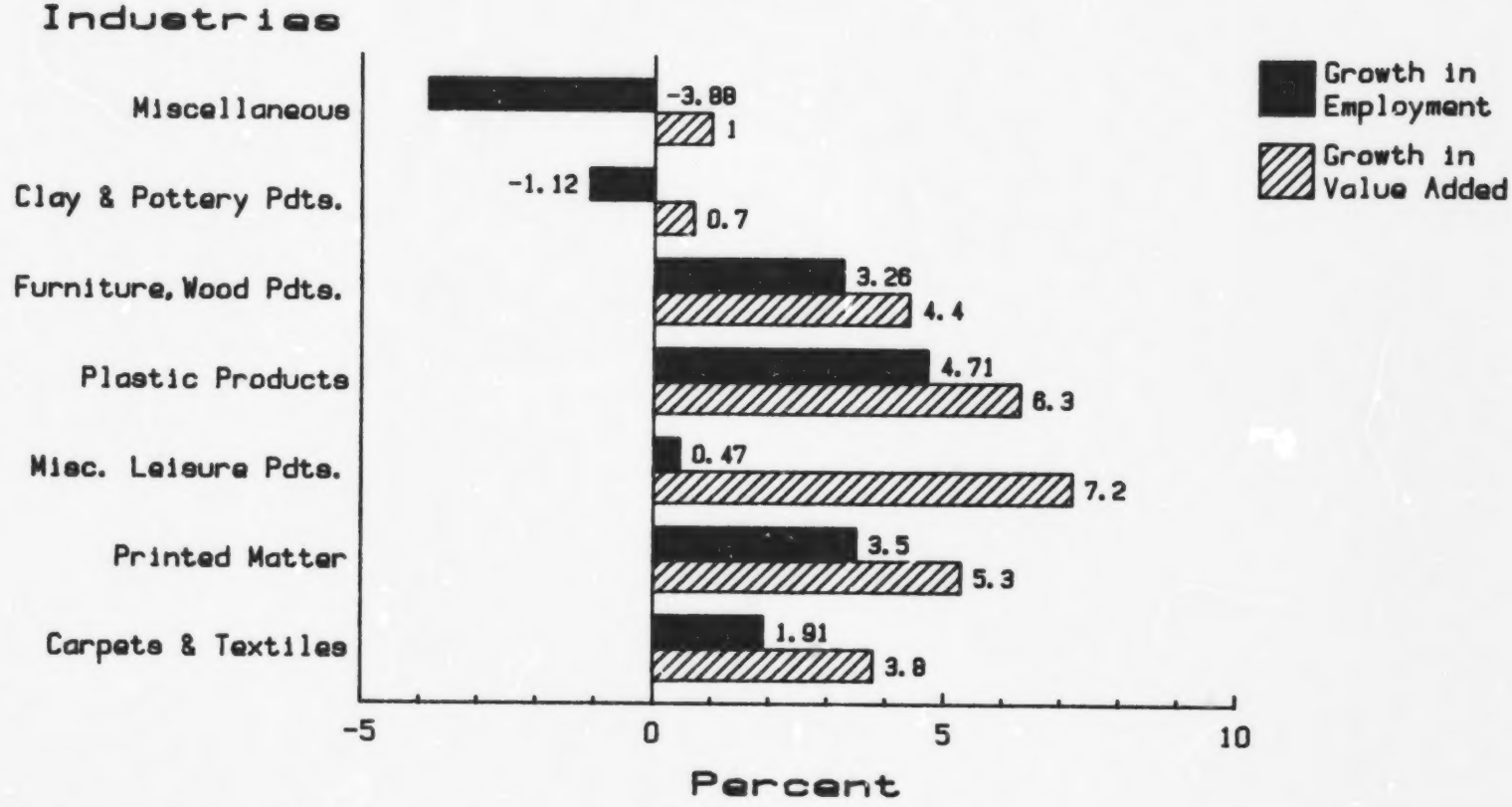
Employment by sector
was 252,000

Employment figures for electronic component industry are not included separately in above

Canada
1976 - 1981

11.2

Labour-intensive industries have potential for growth in both value added and employment



1. Employment growth is annual avg. of 1976-1981
2. Value Added growth is real average annual for 1976-1981

Canada
1976 - 1981

The most effective method of reducing the amount of paper work required from small business is *thresholding* — the establishment of size thresholds for reporting and regulatory control purposes. For example, all manufacturing firms with fewer than 500 employees could be exempted from certain requirements. In other cases, they can be allowed to respond on summary forms that require considerably less detail than the forms sent to larger firms. Alternatively, for firms below the threshold, the frequency of reporting can be substantially reduced — annually rather than monthly, for example. Thresholding reduces the impact of regulation on small firms without compromising government's information collection and regulatory requirements. Since larger businesses constitute the greater part of activity in most industries, thresholding is unlikely to affect the integrity of information and regulatory systems to any significant extent.

Finally, it is vitally important that government avoids direct "hands-on" involvement in financing small businesses. Most smaller firms serve local or specialized markets. The economic ecology of each individual market is quite fragile, and a delicate balance is maintained between demand and capacity. Government financial subsidies to individual firms run the risk of inflicting permanent damage to these ecologies. Typically, the stronger and more entrepreneurial firms are able to secure financing from private institutions and personal sources (equity in houses, family and friends); they seldom require recourse to government subventions.

Firms that appeal to the government for financial help from one of its "hands-on" subsidy programs have usually been turned down by private lenders. This indeed is one of the program's major eligibility criteria. Thus, by design, these programs are aiding weaker firms. Upsetting the economic ecology of small markets by adding additional capacity to firms run by people who have been turned down by the private sector is a certain recipe for problems. Not only are such marginal firms prone to a high failure rate, the presence of excess capacity with subsidized capital is bound to damage the prospects of healthy firms, which are expected to pay the full cost of capital. Capital is dissipated when the subsidized firms fail. And healthy firms are made less profitable and may even be put out of business.

It is our recommendation that direct "hands-on" programs for subsidizing the cost of capital of small businesses be discontinued. A "hands-off" program of financial support for small business through tax relief is the only financial measure that will help them without having recourse to harmful intervention in the delicate mechanisms of the market in which small firms operate.

Strategy Implementation

The tax provisions of these recommendations can be put in place within the tax system's existing structure. All that will be required is incorporation of these provisions in the next federal budget and a corresponding set of changes in Revenue Canada's regulations.

To reduce the impact of regulatory and paper burden on small business will require attention from a variety of government departments. This can best be accomplished by a government task force. A task force of limited duration should be charged with developing the detailed recommendations.

Federal programs for financial support of small firms through "hands-on" decision-making should be dismantled. Savings in federal expenditures will make up for some of the tax expenditures that will be incurred by adopting the income tax and capital gains provisions described above.

Chapter 12
A STRATEGY FOR THE TRANSPORT EQUIPMENT SECTOR

Much has been said about the industries in the Transport Equipment Sector in other parts of this book. These industries are relatively mature. Although they have been integrated in North America, they are run mainly by US firms and their subsidiaries.

As can be seen in Figure 12.1, the motor vehicle assembly and spare parts industries are major employers in this sector, as is the agricultural equipment industry, although total employment is not substantial. Figure 12.2 shows that the automobile industry was in serious economic difficulty during the 1976-81 period.

Strategic Issues

The major national strategy for this sector has been the Canada-US Auto Pact, which encouraged the integration of the automobile industries in the two countries. This integration has been facilitated by the fact that major firms in both the automobile and the component parts industries are based in the United States. Canadian plants have not experienced difficulty in maintaining open access to the American market because the eventual beneficiary of growth in Canadian production was an American firm. Such may not be the case in the construction equipment industry, where a free trade pact would be resisted by US-based manufacturers, who would expect to see some of their markets lost to Canadian-owned corporations.

The Auto Pact has benefited Canada in many ways. Value added grew in both the vehicle and component industries. Canadian plants have been able to achieve a degree of scale and specialization that would have eluded them if they had been constrained to serve only the Canadian market. Some Canadian auto plants are reputedly among the most productive in North America.

But, along with its advantages, the Auto Pact has created a number of problems. The principal problem stems from a reduction in Canada's freedom to formulate strategy for the auto industry. Strategy formulation has become a North American affair, firmly controlled by the United States parents. This is a natural outcome of the large size of the American market and the complete absence of major Canadian-owned firms in the United States. Decisions about the fate of the North American industry are made in Detroit and Washington. There is little that Canadian governments or businesses can do unless the Americans are willing to oblige. In most cases, it is the Americans who will take the lead, with Canadians following with varying degrees of reluctance.

Take the current recovery in the motor industry. This recovery was due principally to an agreement between the US government and Japanese automakers for the latter to exercise "voluntary restraint" in their exports to the United States. With the Japanese limited to a smaller share of the American market than would have been the case under competitive conditions, American automakers saw their sales rebound vigourously. Furthermore, they have been able to raise prices without fear of losing their share of the market. Consequently, profits have improved even more than sales.

Canadian plants of US automakers participated in the North American industry's return to prosperity. In fact, most Canadian plants did as well or better than their US counterparts. It is important to recognize that the main reasons for the return to high-volume, profitable operations in Canadian plants were to do with market factors in the United States and not with Canadian market conditions. Canadian plants sell over 85 per cent of their output to the American market. Therefore, it is the conditions in that market that determine the level of production in Canada's auto plants.

The agreement between the Canadian government and the Japanese to impose "voluntary restraint" on Japanese automobile shipments to Canada meant that Canadian market conditions were similar to those in its neighbour to the south. Since the bulk of North American cars sold in Canada are produced in the United States, it is the American plants that have benefited from the rebound in sales of North American cars in Canada.

Recommended Strategies

The most critical strategic areas for Canadian industries in this sector are beyond Canada's control. Of crucial importance will be Washington's policies towards Japanese imports. There are signs that the Reagan administration has become disenchanted with the import restraint policy. The general feeling is that the automakers have used the respite from the previous intense competition to increase their short-run profits, rather than to reposition themselves for long-run competitiveness, as was the original intention. Well-publicized bonuses for auto executives have no doubt exacerbated the ill-will generated by their short-term opportunism in the marketplace. The general feeling is that the restraint program's beneficiaries have been the shareholders of the auto firms, while the costs

of the program have resulted in higher prices for both domestic and imported cars.

Now that Washington has reversed its restraint policy and dismantled the system of protecting the American market from Japanese competition, Canadian auto plants will be severely affected. Volume will drop, layoffs will become commonplace again, and profits will fall rapidly. Nothing that the Canadian government may do will combat this trend. Even in the highly unlikely possibility that the Canadian government succeeds in maintaining its agreement with the Japanese to continue protecting the Canadian market after US protectionism ceases, the beneficiaries will be auto plants in the United States.

The labour situation in these industries is equally beyond the control of Canadian policy-makers. The United Auto Workers union has always been dominated by its US leadership. The Canadian arm of the UAW took its cues by and large from the policies of its American parent, despite an occasional show of independence. So far, this system has worked to Canada's advantage, because it has encouraged Canadian unit labour costs to lag behind developments in the United States. Consequently, US automakers have a favourable attitude towards locating production in Canada and so preserving Canadian jobs. Recent attempts to increase the decision-making autonomy of Canadian trade union leaders run the risk of pushing Canadian costs upwards faster than US costs, with unfavourable consequences for the location of production. A breakthrough in automotive wage settlements in Canada will be a Pyrrhic victory. Thus, the recent decision of the Canadian UAW to make the Canadian union independent of its US parent may lead the automakers to decrease their investment in new technology and capacity in Canada.

Canadian policy-makers have little freedom of movement in devising strategies to influence market conditions or labour negotiations. Key decisions will be made in the United States, with only a passing nod to Canadian sensibilities.

In the longer term, the strategic imperative for the North American auto industry is the modernization of its production arrangements. New technologies — robotics, computer-controlled machines and flexible manufacturing systems — are revolutionizing the automotive workplace. There is no doubt that these developments will reduce the size of the workforce. The industry's compelling logic requires significant productivity improvements to maintain competitiveness, as well as substantial improvements in product quality. However, the North American market is mature, limiting the automakers' ability to make productivity gains without decreasing the size of the workforce.

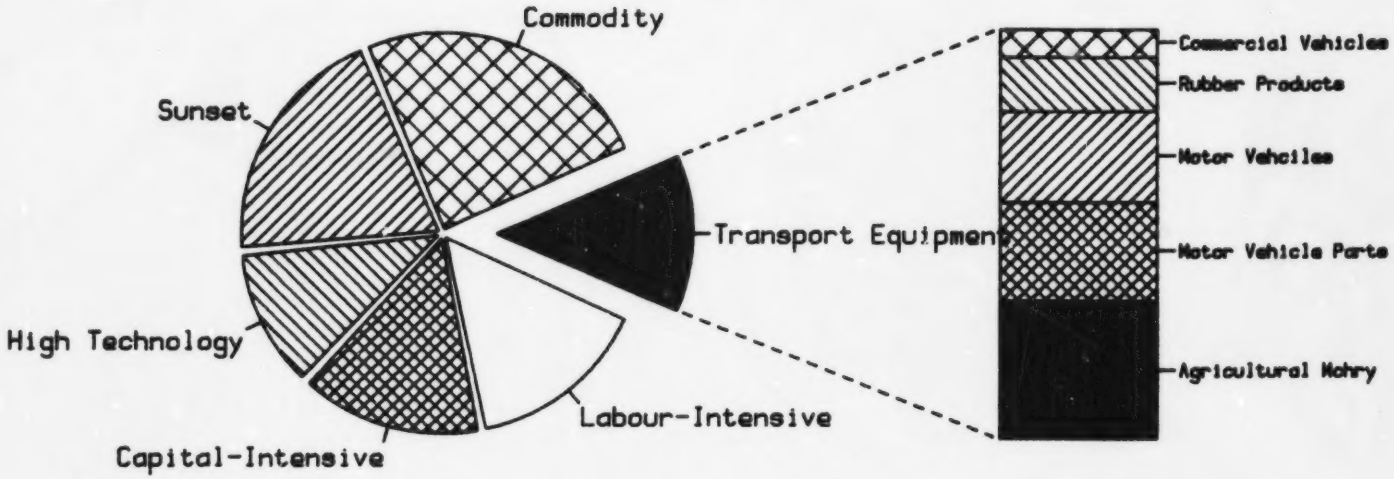
It should therefore be expected that employment in the main automobile plants will decline as automation takes hold. Efforts to impede this process may injure the competitiveness of these car factories. The only area where job growth is possible is in the auto parts industry. Currently, the deficit in Canada-US trade in auto parts indicates that the Auto Pact has not been as successful for this industry as for car manufacturing as a whole.

Again, it is the US market and not the Canadian that is the key to success. Canadian-based parts suppliers must look to the American market for sales growth. One major development that will adversely affect the ability of Canadian suppliers to serve plants in the United States is the adoption of "just-in-time" inventory management systems, which favour locally based suppliers. Canadian-based suppliers will have to offer better prices, quality and delivery to offset these disadvantages.

There is little of a proactive nature that the Canadian government can do about these problems. Its major role will continue to be to maintain open access to the American market through the Auto Pact, which should be renewed when necessary along similar lines to the current pact. It may also be useful to tie Canadian strategy on Japanese imports more formally to US strategy. There are many advantages to the joint development of negotiation goals and tactics; not the least of these will be reliable information and an early warning system. Besides, recognizing the important part the United States will play in its negotiations with Japan will provide Canada with an opportunity to ride on its neighbour's coattails.

12.1

Transport equipment manufacturers are not major employers



Total Manufacturing Employment
was 1,660,000

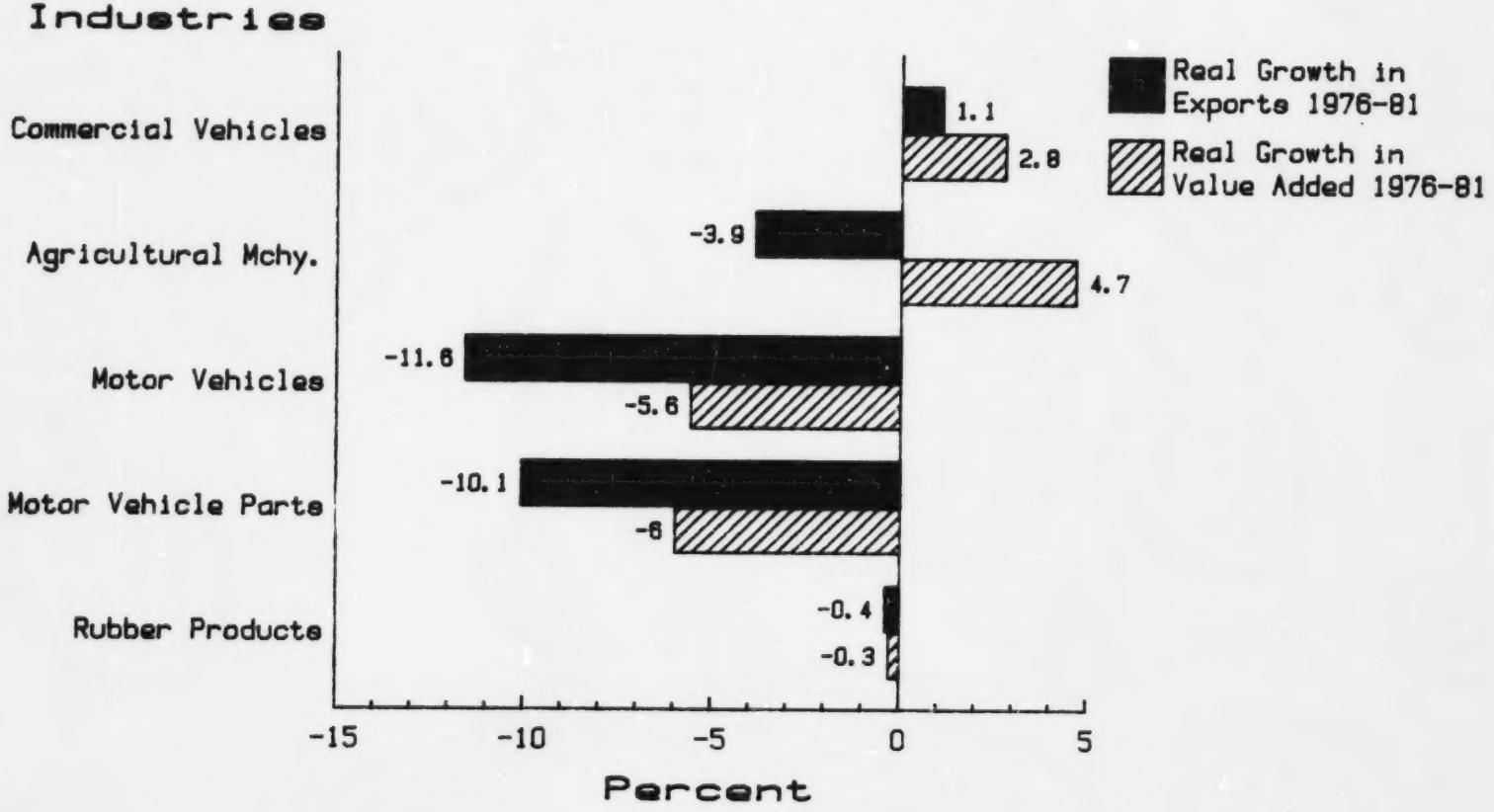
Employment by sector
was 222,000

Employment figures are
annual averages for 1976-1981

Canada
1976 - 1981

12.2

Exports and value added declined significantly in most industries in the Transport Equipment sector



1. Export growth is real annual avg. for 1976-81
2. Value Added growth is real from 1976 to 1981

Canada
1976 - 1981

Subsidization policies for new auto plants and for the modernization of existing plants should be developed on a case-by-case basis. Such subsidies are now a regular part of the American industrial landscape. State and local governments in the United States have subsidy programs designed to attract new industrial investment to their jurisdictions. Without similar subsidies, Canadian locations will be at a disadvantage. In a sense, Canadian provinces and American state governments are in competition with each other. Whether or not Canada eventually wins the battle will depend to a considerable extent on the knowledge and skill it can bring to the negotiating table.

Each major new plant will become a small industrial development program in itself. A Memorandum of Understanding should be negotiated, for each plant, between the Canadian government and the automaker. The MOU should lay out each side's commitments and expectations. On the government side, the key issues should be the quality of technology and the integration of the auto parts network. On the company side, the size, timing and nature of the location subsidy will be vital. It is also important that both parties recognize the relative maturity of the North American auto industry. When new plants are planned, it should be kept in mind that they will have a smaller workforce than existing plants.

The UAW will find it hard to reconcile this policy with its traditional objectives. The UAW is naturally interested in increasing employment in the auto sector. It must recognize that the productivity improvements essential for the Canadian industry's long-run health will inevitably mean that fewer workers will be required to make a given number of cars; and since the car market is mature, fewer workers will be employed in the auto industry in the future.

Chapter 13
A STRATEGY FOR THE ENERGY SECTOR

Even though the Energy Sector is not a manufacturing sector as such, we have included it here because it is the only sector in which Canada has a fully articulated strategy. The National Energy Program (NEP), enunciated in September 1980, set forth the goals, policies and programs that the federal government wished to see adopted for this sector. It is a curious mixture of sensible economic measures and "hands-on," distributionally orientated intervention in the economy. The controversy surrounding the latter and the difficulties experienced in negotiating changes in revenue-sharing with the provinces are the principal aspects of the NEP that have occupied public attention.

As can be seen in Figure 13.1, government policy has a major influence on the export performance of industries in the Energy Sector. In addition, both the electric power and natural gas industries benefit from Canada's geographic proximity to the United States. Canada's energy exports were dominated by crude petroleum and natural gas (see Figure 13.2). However, both these industries experienced declines during the 1976-81 period, while exports of electric power increased (see Figure 13.3).

Strategic Issues

The Energy Sector is strategically important not merely because of the contribution it makes to gross domestic product, exports and employment. Heating and gasoline prices affect the daily lives of all citizens and are a constant consideration for most businesses. Moreover, energy policy has a symbolic effect on other sensitive areas, such as foreign investment in Canada. There is no doubt that the NEP provisions have fostered the commonly held impression among foreign businessmen that Canada has become hostile to foreign investors. The retroactive buy-in provision for Petro-Canada was particularly disliked by the international business community because of the implication that the government will arbitrarily change the rules of the game after businesses have taken all the front-end risks.

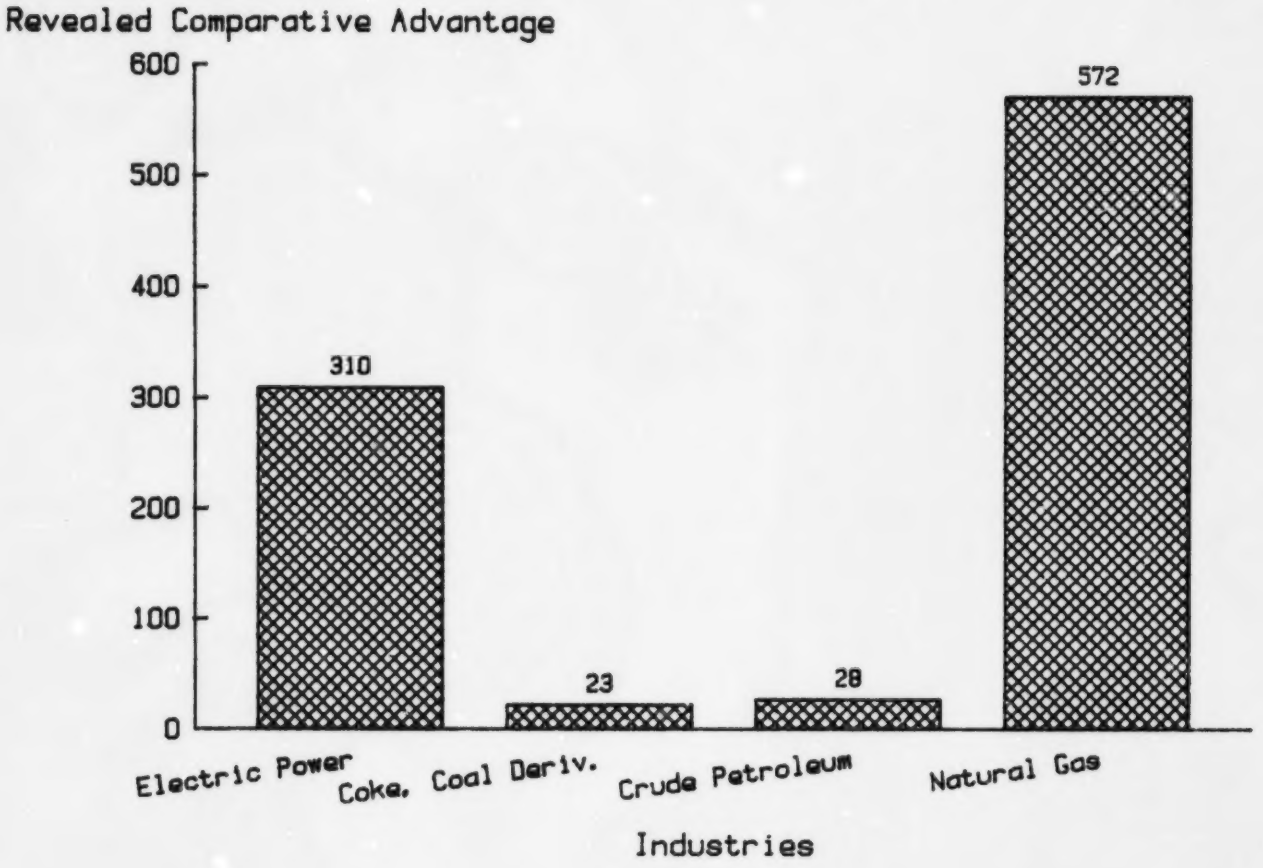
If there is one area in which the government wishes to demonstrate a change of attitude towards industrial policy, it is the Energy Sector. Changes in the key provisions of the NEP will be difficult to formulate at the political level, but they will be administratively easy to implement because they involve instruments such as tax policy and incentive programs over which the government has direct control. Furthermore, by changing policies regarding Petro-Canada, the government can send a clear signal about its approach towards crown corporations.

Pricing is a decisive policy issue for the Energy Sector. Since Canada is more or less self-sufficient in crude petroleum and has a considerable surplus of natural gas, many believe that energy prices should be "made in Canada," — Canadian prices should be made to rise more slowly than world prices. While low prices have an obvious political appeal, they have an insidious tendency to slow down the adjustment process. The decision to cushion Canadian consumers from the impacts of the 1973-74 OPEC oil crisis and in 1980 from the Iran oil crisis made domestic and industrial consumers dangerously complacent. Wasteful energy practices are rational economic responses to artificially low energy prices. At the individual level, they make good sense. At the national level, they create a perilous vulnerability.

There is no better indication of this vulnerability than to contrast Canada with Japan, which is almost totally dependent on imports for most of its energy. The Japanese decided to accept the oil price shocks head-on and allowed them to percolate immediately to all sectors of the economy. The Japanese treated the crisis as a crisis, and made an all-out effort to reduce energy consumption across the board. The country emerged with an energy-efficient economy and an array of energy-efficient products. Japanese cars have attained fuel consumption levels that are the envy of automakers all over the world. Japanese industrial equipment is also more fuel-efficient than products made in other countries. As energy prices in other countries slowly reached world price levels, consumers and industrial customers flocked to buy more Japanese products that offered them superior fuel efficiency. And so, the crisis-like adjustment process that the Japanese adopted had twofold benefits: Japanese costs are lower because Japanese production uses less energy, and exports are stimulated, since customers in other countries value fuel efficiency more when their domestic energy prices eventually adjust. The Japanese response to changes in international oil prices was dynamic. They turned a formidable competitive disadvantage into a weapon for further enhancing their international competitiveness.

13.1

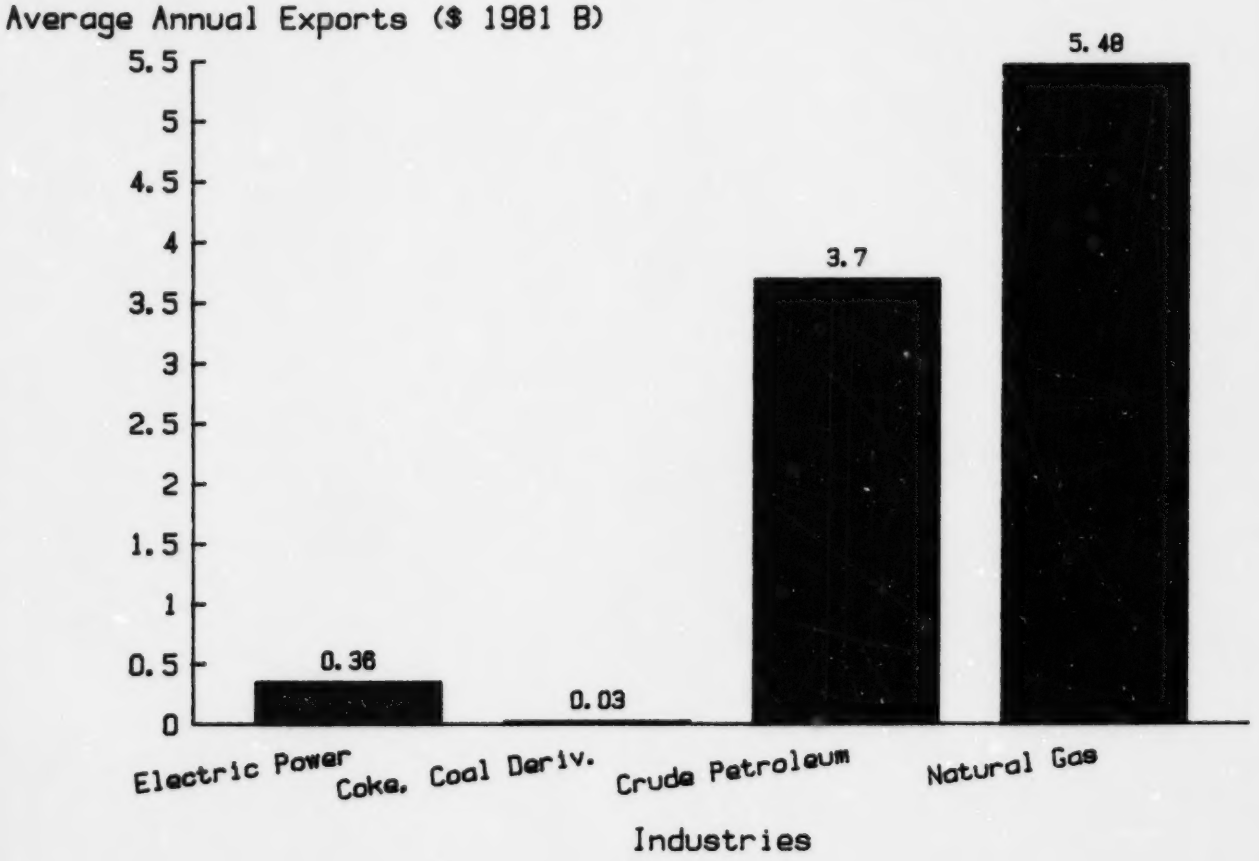
Government action has a major influence on the export performance of the Energy sector



Canada
1976 - 1981

13.2

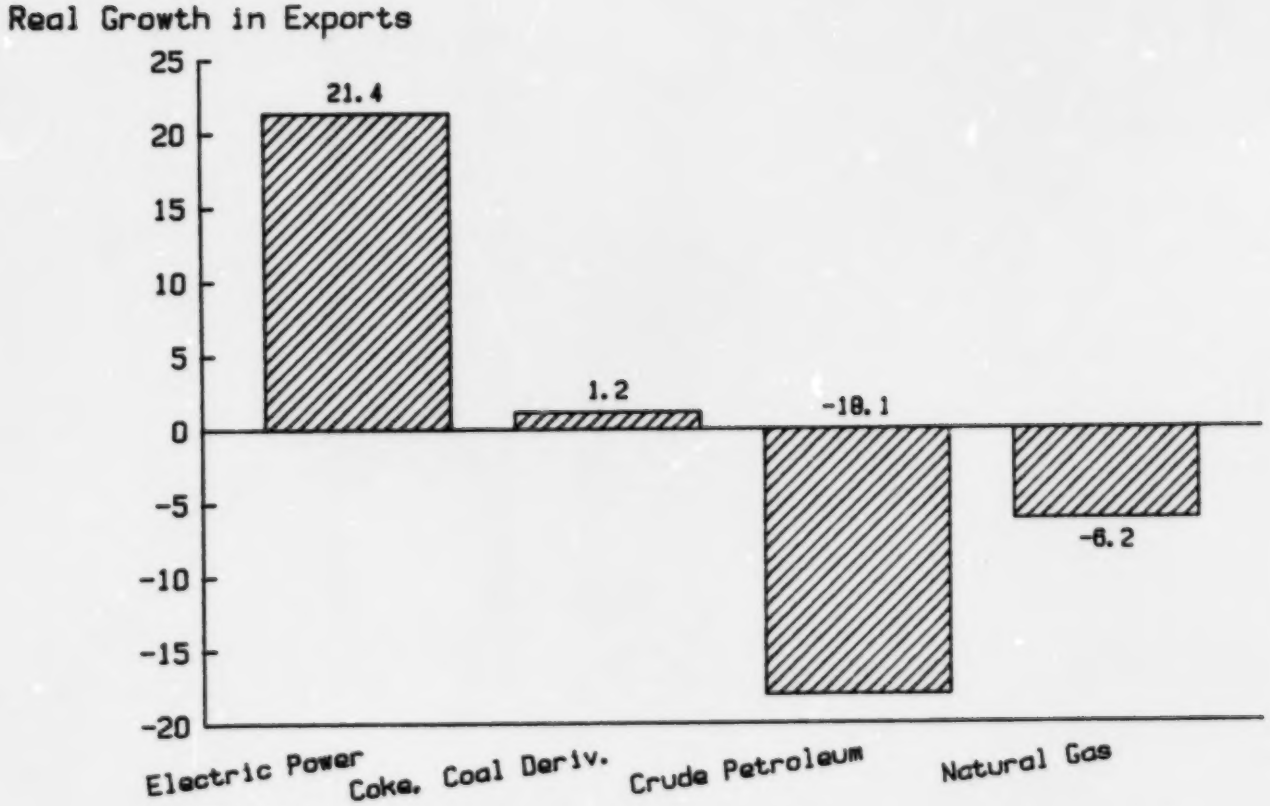
Energy exports are dominated by Natural Gas and Crude Petroleum



Canada
1976 - 1981

13.3

Growth in exports of Electric Power is in sharp contrast with trends in hydrocarbon products



Canada
1976 - 1981

By contrast, Canada contrived to preserve the status quo for as long as possible. By keeping oil prices down, Canada condemned itself to delaying adjustment from the pre-1973 industrial structure. While the rest of the world was learning to cope with the new realities of high energy prices, Canada continued to behave as though the old system of low prices was intact. Canada's adjustment processes were just beginning when other countries had substantially completed theirs. Step-by-step price increases do not stimulate the same response as steep one-time jumps. As a consequence, Canada finds itself with a less fuel-efficient industrial structure and a paucity of exportable fuel-efficient products.

The second problem stemming from Ottawa's determination to cushion Canadians against the oil shock was the strain placed on government revenues. Since refineries east of the Ottawa Valley Line use imported crude oil, they were compensated for the difference between world prices and the domestic price by a direct charge to federal general revenues. As the price differential increased, the costs of this program skyrocketed. One of the major provisions of the NEP was to shift the burden of this subsidy from general revenues to a direct tax on energy consumers. These are essentially social equity programs. Consumers west of the Ottawa Valley Line and energy producers were being forced to make economic sacrifices for the benefit of Canadians in Quebec and the Atlantic Provinces, who in turn were being encouraged to follow wasteful energy practices.

The third problem of an artificial price for energy in Canada was the lack of adjustment in the petro-chemical industry. The OPEC oil crisis made crude oil-based petro-chemical plants uneconomic. The only petro-chemical plants that remain economically stable are those based on byproducts such as flare gas, natural gas straddle plants or on subsidized crude oil. Petro-chemical plants in Montreal and Sarnia flourished because they had access to subsidized crude and they continued to remain profitable as long as domestic crude prices remained below world oil prices. But with the slowdown in real growth in world oil prices in the early 1980s and the administered rise in Canadian prices, the gap between the two has almost disappeared. Consequently, Canada's petro-chemical industry is now in serious trouble. It has not adjusted to changes in the relative prices of crude oil versus other feedstock and is now importuning the government for subsidies.

Controls tend to beget other interventions. Because prices in Canada were artificially low, it was necessary to set up an elaborate structure of incentive programs to encourage Canadians to do things that would have been rational if world prices had prevailed, but which were not pressing when Canadian prices were kept low. Special incentives were required to get Canadians to insulate their houses, to convert from oil heating to electric or natural gas heating and to experiment with solar heating. Special incentives were instituted by the federal government to encourage the oil industry to explore for oil in federally controlled lands in the Arctic and offshore, where provincial governments did not hold jurisdiction.

Gradually, administrative processes have replaced market mechanisms in every aspect of the Energy Sector. A network of programs, policies and regulatory processes are in place that govern the industry, from the decisions about where and how much to explore all the way through to decisions on the extent and manner of consumption. Political expediency and arbitrary administrative processes are the order of the day. There are no natural market processes at work to ensure that long-run efficiency will be taken into account. The pressing issues are those of control and maintenance of the income distribution framework.

Success in the Canadian oil industry now depends on finding ways to take advantage of the labyrinth of regulations, incentives and special provisions of energy policy. A new kind of successful energy executive is gaining ascendance — not one who understands exploration, production, transportation, refining or marketing, but one who knows how to get along with government and exploit the arcane provisions of its programs. The former set of skills is being allowed to atrophy, while the latter is allowed to flourish.

Figure 13.1 shows how Canada's export peformance in the Energy Sector is influenced by government directives and policies. Exports of crude petroleum have been severely curtailed. On the other hand, exports of electric power and natural gas are both quite healthy because of the ease of transporting them across the Canada-US border. The high Export Revealed Comparative Advantages for these commodities reflect the relatively small volume of world exports for them.

Exports of natural gas have declined during the last few years because of federal export pricing policies, which have resulted in higher prices than US gas utilities have been willing to pay. Since natural gas prices in the United States are not yet fully deregulated, supplies of low priced US gas are still available. But Mexico is eager to sell gas to the United States and prices its gas quite competitively (see Figures 13.2 and 13.3).

In contrast, Canada's electric power exports have been growing at a brisk pace. Much of the increase goes to the northeastern United States, where generating capacity is based on imported oil (Canada's exports are generated from hydro, coal-fired or nuclear plants). Prospects for continued increases in electric power exports are good, provided that Canada has surplus generating capacity. At present, energy exports are dominated by natural gas and petroleum. If present trends continue, electric power will become the country's major energy export.

Recommended Strategy

The first step in developing a sensible economic strategy for the Energy Sector is to dismantle the National Energy Program. All its major provisions are either outdated or have undesirable side effects. The symbolic

value of renouncing the NEP will go a long way towards rebuilding confidence in the Canadian economy.

Deregulating prices of crude and refined petroleum and of natural gas is an immediate priority. This is a propitious time for such a move because most Canadian prices are close to international levels, since the latter have not risen as much as was anticipated. Deregulation of prices is necessary to re-establish the role of market mechanisms in bringing demand and supply into balance.

Second, the entire federal program of "hands-on" control of exploration through the Petroleum Incentive Program (PIP) should be replaced by a market-driven system. Whatever incentives remain should be delivered through the tax system. This calls for a return to a tax regime very similar to that which obtained in 1976, with some minor adjustments to preserve the current net tax take of the federal and provincial governments in roughly their current proportions. Abandoning the direct incentives programs will result in a sharp cutback of exploration in the high Arctic and may also reduce the level of offshore oil drilling. On the other hand, deregulation of prices inevitably will lead to an equally sharp increase in conventional exploration, mainly in Alberta and Saskatchewan. The profits and stock prices of established firms with reserves will rise. These adjustment processes will take place quickly because financial markets are very efficient in dealing with such transactions.

The third part of the process of dismantling the NEP is to rescind the retroactive 25 per cent "back-in" provision in favour of Petro-Canada. All back-ins already exercised should be returned to their previous owners and the provisions themselves should be legally rescinded. No single step will carry as strong a signal about the government's commitment to a fair system of economic policy towards the Energy Sector. No measure will rebuild business confidence as quickly and as effectively. It will result in a return to international respectability in the energy industry of a sort that has eluded Canada since 30 September 1980.

Finally, there is the question of the fate of Petro-Canada itself. There is good evidence that the Canadian public is favourably disposed to the idea of a national oil company; the Petro-Canada logo on a service station tends to have a certain unique drawing power. As long as Petro-Canada is required to operate with exactly the same rights and privileges as privately owned oil companies, this demonstration of patriotism is innocent enough. The harmful economic impacts of Petro-Canada's operations stem from the preferential access it has to information and government favours, from its ability to influence policy decisions from inside the bureaucratic and political processes and from its freedom from evaluation of its economic efficiency. Stripped of these special privileges, Petro-Canada will behave no differently than a large, privately owned corporation, and therefore its impact on economic policy will be neutralized.

One means of imposing a regime of economic efficiency on Petro-Canada would be to exercise the normal discipline of capital markets. For example, the government could distribute a significant portion of its equity to Canadians and allow the corporation's shares to trade in the market, provided that they can be held only by Canadian citizens or certain Canadian-controlled institutional investors, such as pension funds. Every person who was eligible to vote in the 1984 federal election could be given a share in Petro-Canada, with the total value of the distribution held to 45 per cent. When trading in these shares settles down, conventional share price-based tests of economic performance would yield a measure of the corporation's stewardship of the resources at its command, provided that it is not granted special access to information or a preferred regulatory status. These measures would preserve whatever satisfaction Canadians derive from the existence of a national oil company, at no cost in economic efficiency.

Implementation

Deregulation of prices and dismantling the incentive programs will require less in the way of bureaucratic structure than currently exists for the Energy Sector. The new set of policies can be implemented with a substantially slimmer federal bureaucracy. Elimination of a whole array of consumer incentives will also result in a smaller bureaucracy. Therefore, these recommendations should make a significant contribution towards reducing federal expenditures and the national deficit.

The new energy bureaucracy should be essentially a policy advisory unit, and the regulatory duties of the National Energy Board should continue to rest with that agency. We recommend that there should continue to be a modest level of direct line activity in the information and R&D fields. Other than these normal functions of government, very little bureaucracy will be required. Redundant civil servants should be reassigned to other departments or even laid off.

If further revenues are desired from the Energy Sector, they could be raised by offering to sell one (or two) Petro-Canada shares for each one given away. This will result in a one-shot increase in federal revenues without increasing taxes. It could be structured so that the total equity which ends up in private hands remains at 45 per cent.

Part III
THE MACRO-ECONOMIC ENVIRONMENT

Chapter 14
CANADA'S POSITION IN THE US MARKET

The United States — the largest, most affluent market in the world — occupies a position of special importance in Canada's economic welfare. Its geographic proximity to Canada and the generally preferential treatment it accords to Canadian imports have played a major role in giving Canadian manufacturers access to a market large enough to reap economies of scale. Therefore, any discussion of the prospects for Canadian manufacturing has to take special account of the impact of trade relations between Canada and the United States on Canadian manufacturing.

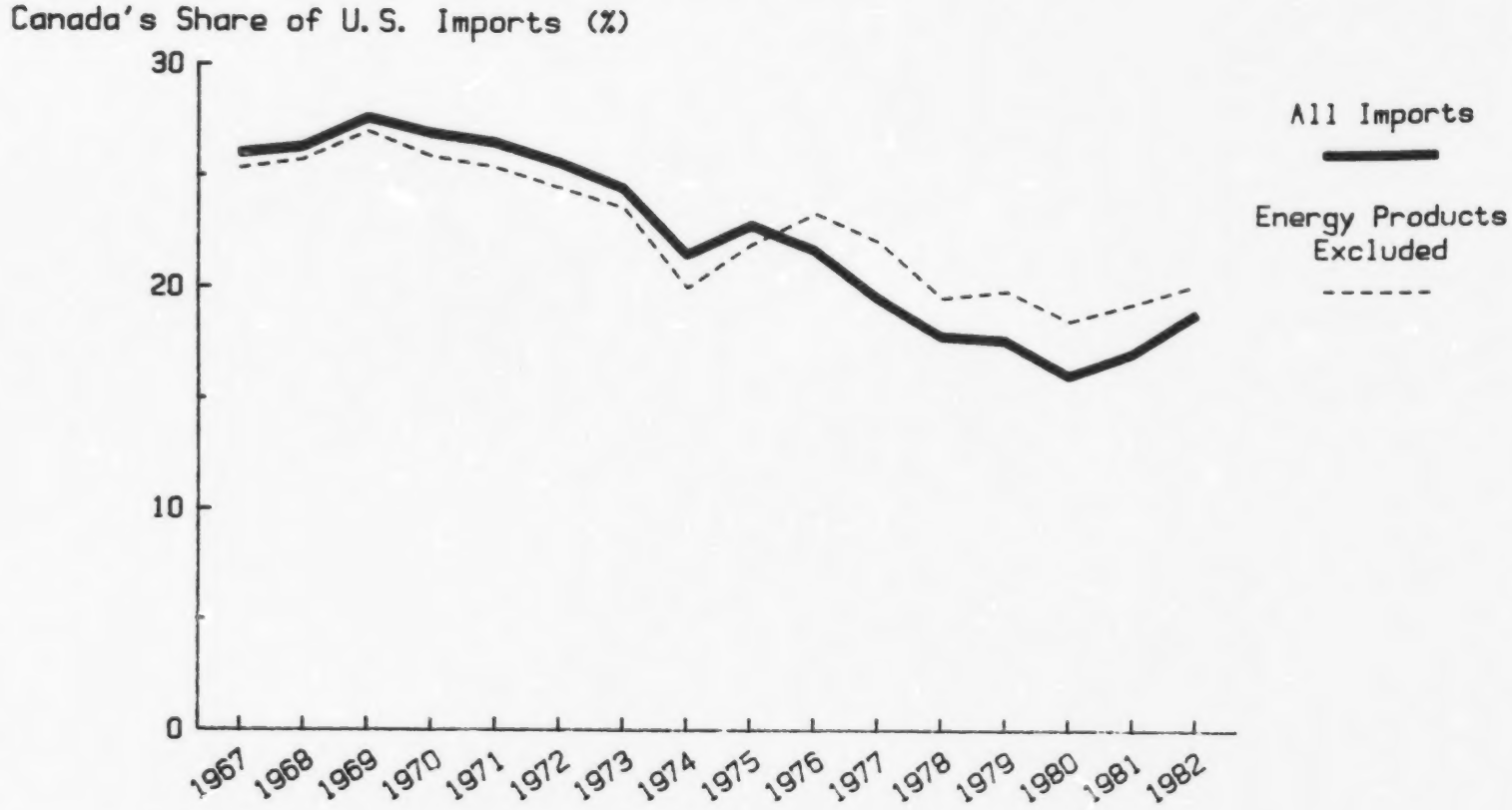
Much of the discussion of Canada-US relations and Canadian manufacturing has focussed on the relatively high levels of US ownership of manufacturing firms in Canada. Indeed, it has been a major concern of Canadian economic nationalists that Canadian subsidiaries of US multinationals are so dominant in manufacturing that Canada has become a "branch plant" economy, populated by firms with little autonomy to make decisions. What is lost sight of in this line of argument is that Canada is also the United States' largest trading partner and is the single largest source of imports into the US. Between 1967 and 1982, 22.3 per cent of US imports were from Canada. Thus, not only is the United States Canada's largest customer, Canada is the largest supplier to the United States.

Canada's share of this vital market fell during much of the period covered by this study, as Figure 14.1 shows. When energy-related products (crude petroleum, natural gas and electric power) are excluded from the analysis, the decline in market share is less severe. Nevertheless, the loss of market share in manufactured products should not be taken lightly.

The market share position of industries in the Commodity Sector is shown in Figure 14.2. Some industries, the pulp and paper industry for instance, have a strong position in the US market and continued to show strength throughout the 1967-82 period. In other industries, the country's competitive position has deteriorated. The most dramatic decline was in the coal products industry, where Canada's market share deteriorated substantially. From 1967 to 1971, the United States was largely self-sufficient in coal. Imports began to penetrate the US market during the

14.1

The decline in exports of energy products accounts for a large portion of Canada's loss of share in imports to the U.S.

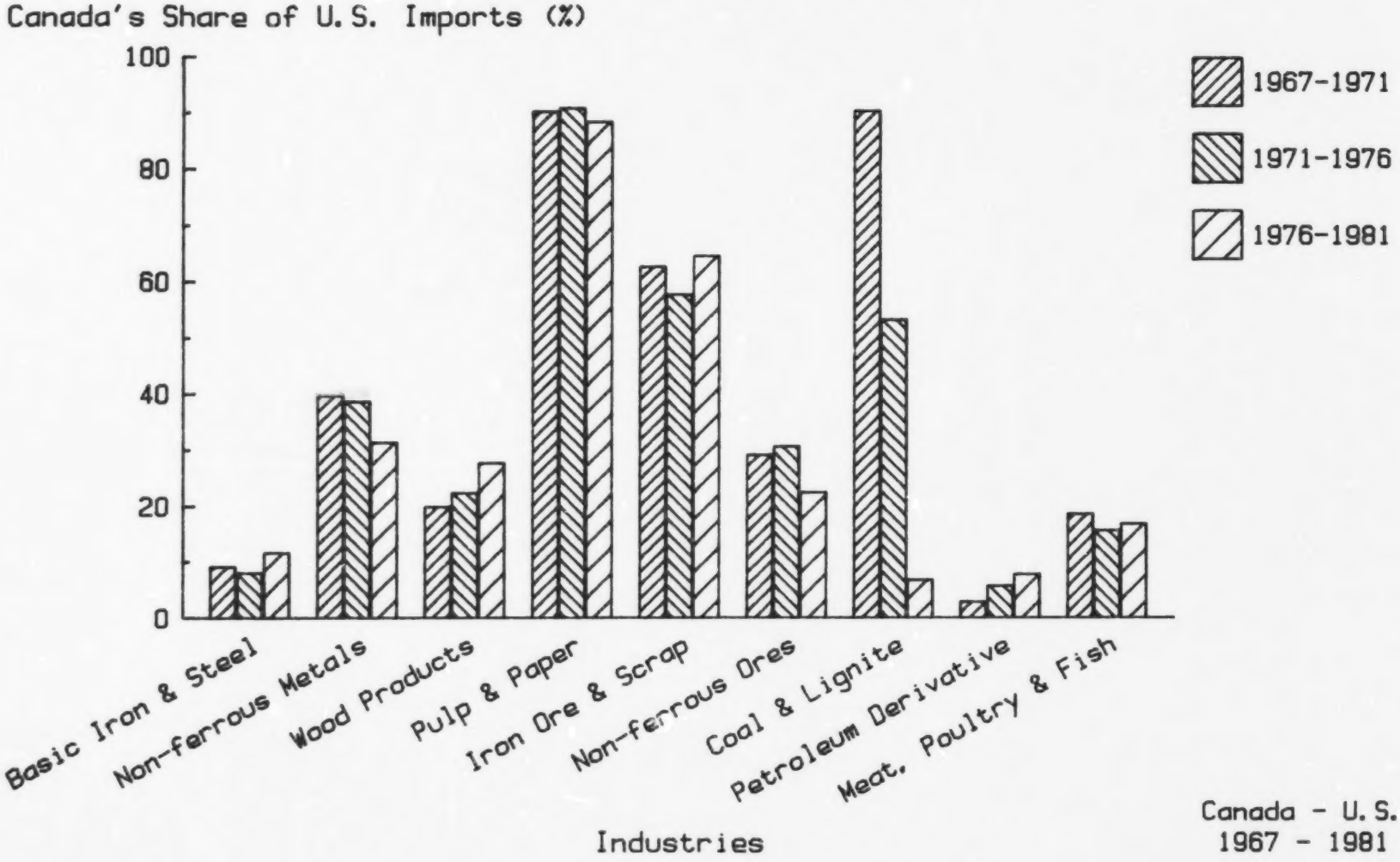


Note: Energy products include Crude Petroleum, Natural Gas, Coke & Coal Derivatives, and Electric Power

Canada - U.S.
1967 - 1982

14.2

Some Commodity sector industries have suffered serious setbacks



1976 to 1981 period. Canada's exports of coal did not keep pace with other exports, and Canada's market share fell from 90.5 per cent of imports in 1967-71 to only 9.4 per cent in the 1976-81 period.

In the Sunset Sector, market shares of most industries declined (see Figure 14.3). Just as was the case in Canada, these industries face strong competition in the US from imports from low-wage countries. The only Canadian industry in this sector that has a substantial share of the US import market is the foundry products industry, which retains 37.5 per cent of that market. Many Canadian firms in this industry are subsidiaries or affiliates of US parents. Foundry products are expensive to transport, giving Canadian producers a location advantage over off-shore producers. Given the unfavourable cost structure of the Sunset Sector industries, further share losses are to be expected.

Market share declines in the High Technology Sector are also significant and are perhaps of more concern to a country like Canada that has a well-educated workforce and a high standard of living (see Figure 14.4). Canada has lost its market share in several key high technology industries. In the aerospace industry, for example, Canada's share of US imports declined from 55.1 per cent in 1967-71 to 26 per cent in the 1976-81 period.

An even larger share decline was experienced in the weapons industry. Given Canada's privileged position with respect to access to the US defence market and the existence of the Defense Production Sharing Agreement between the two nations, these declines are disturbing symptoms of strategic problems within the industries. Even in the telecommunications equipment industry, where Canada is thought to have a strong strategic position, market shares have declined substantially.

In the Capital-Intensive Sector, industries in which Canada has a strong position in raw materials have a substantial market share of US imports (see Figure 14.5). However, three industries of this type have lost some market share — fertilizers, miscellaneous raw materials, and beverages (including alcoholic). Two industries gained market share — cement and ceramic products — both of which are energy intensive.

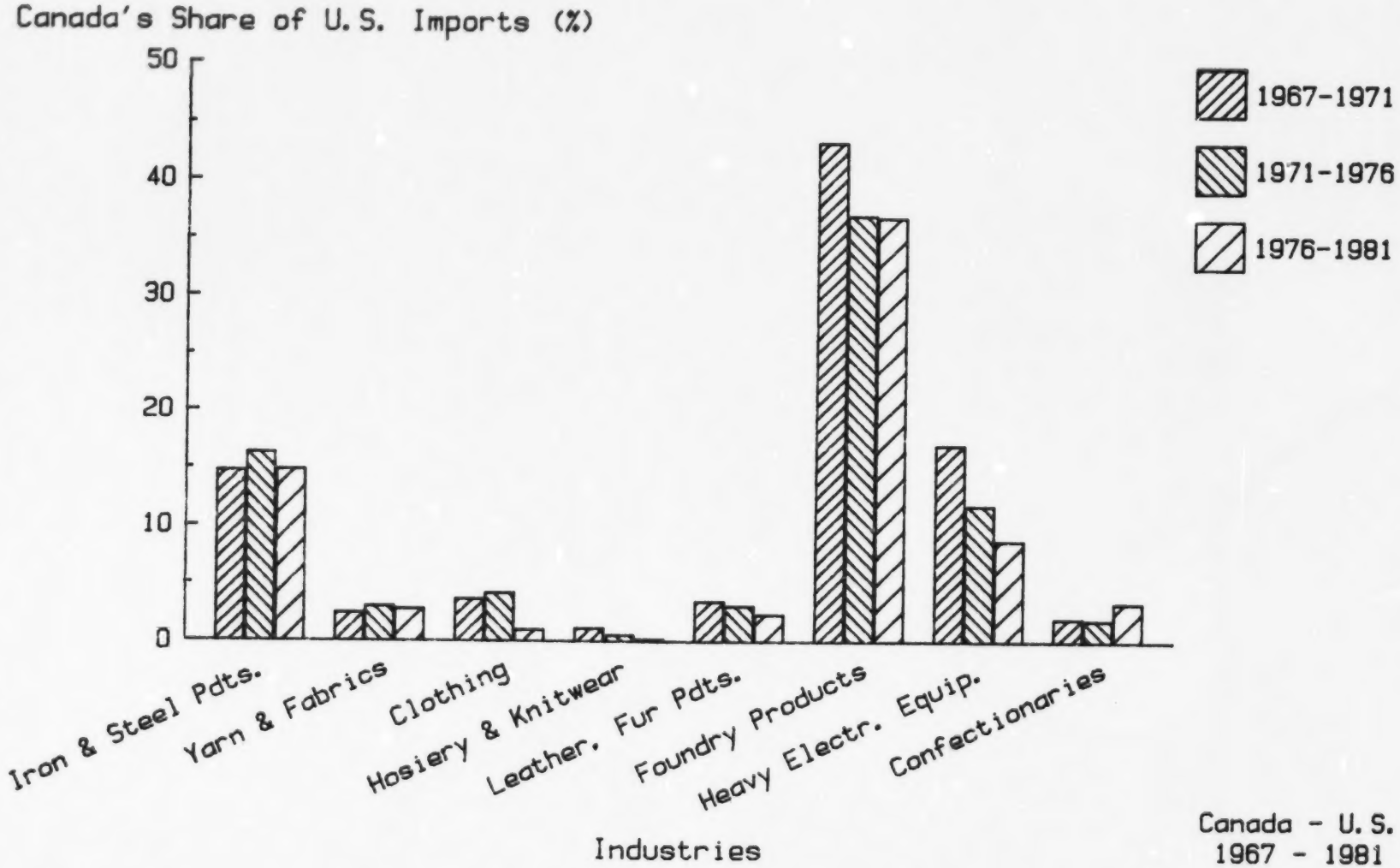
The competitive picture is quite different in the Labour-Intensive Sector (see Figure 14.6). In most of these industries, market shares have held steady or improved. Improvements in their market share position is one optimistic feature of the performance of the Canadian portfolio, particularly in light of the job creation capacity of this sector. However, it has to be recognized that most industries in the Labour-Intensive Sector started out with a low market share, and none have dominant positions in the US import market. Industries in the Transport Equipment Sector generally started out with a strong position in the US market, but all but one have lost market share (see Figure 14.7). The only one that gained market share was the rubber products industry, whose strong performance can be traced to the efforts of one company — Michelin. The other industries have lost their market share, mainly to Japanese producers, who have made very substantial inroads into the US market.

Finally, the competitive pattern of the Energy Sector (shown in Figure 14.8) reflects the locational advantages of Canadian producers with respect to the US market. Canada is the only exporter of electric power to the United States and has been a dominant supplier of natural gas. On the other hand, it has dropped from being a major supplier of crude petroleum to a very minor position, largely because of Canadian government restrictions on oil exports.

This brief review of changes in Canada's share of US imports demonstrates the declining position of Canadian exports in its principal market. The importance of this market to Canada's economic well-being can hardly be overemphasized. Maintaining and enchancing Canada's access to the American market must remain high on the national agenda. In the short run, much of the policy debate about these issues will revolve around questions of tariffs and treaty arrangements to exempt Canadian exports from trade-limiting devices that may be developed in the United States to provide protection for that country's domestic industries. However, it is important that such concerns do not draw the attention of Canadian policy-makers away from the more fundamental and longer-term issue. Ultimately, the extent to which Canadian industry can continue to maintain a significant market position in the United States has to depend on its competitiveness. Canada must continue to be able to provide products that are in demand at competitive prices. And it must also prune those parts of its portfolio in which it has lost competitive advantage while nurturing new industries to take their place.

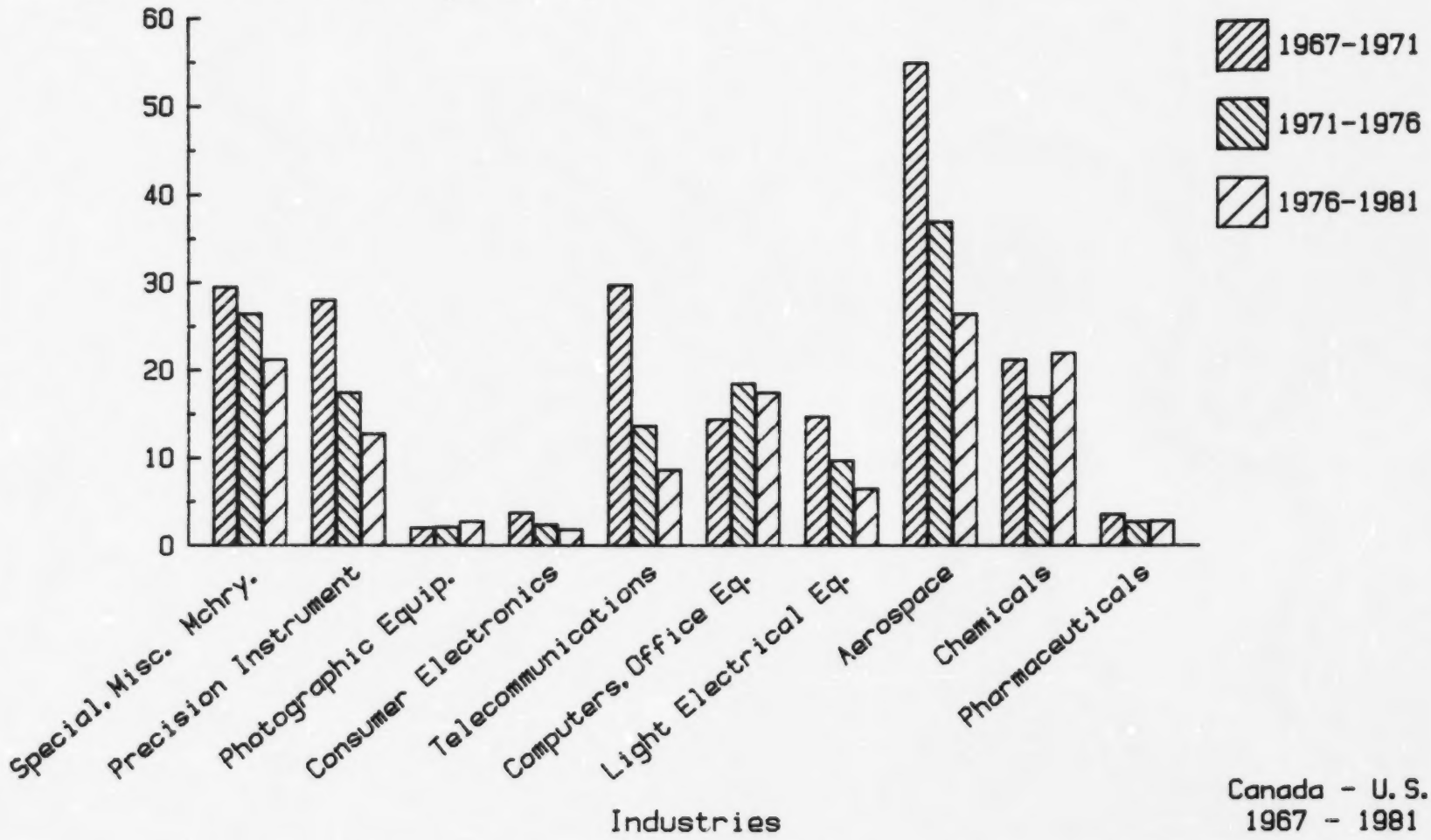
14.3

Market shares of the Sunset sector industries remained stable or declined



14.4

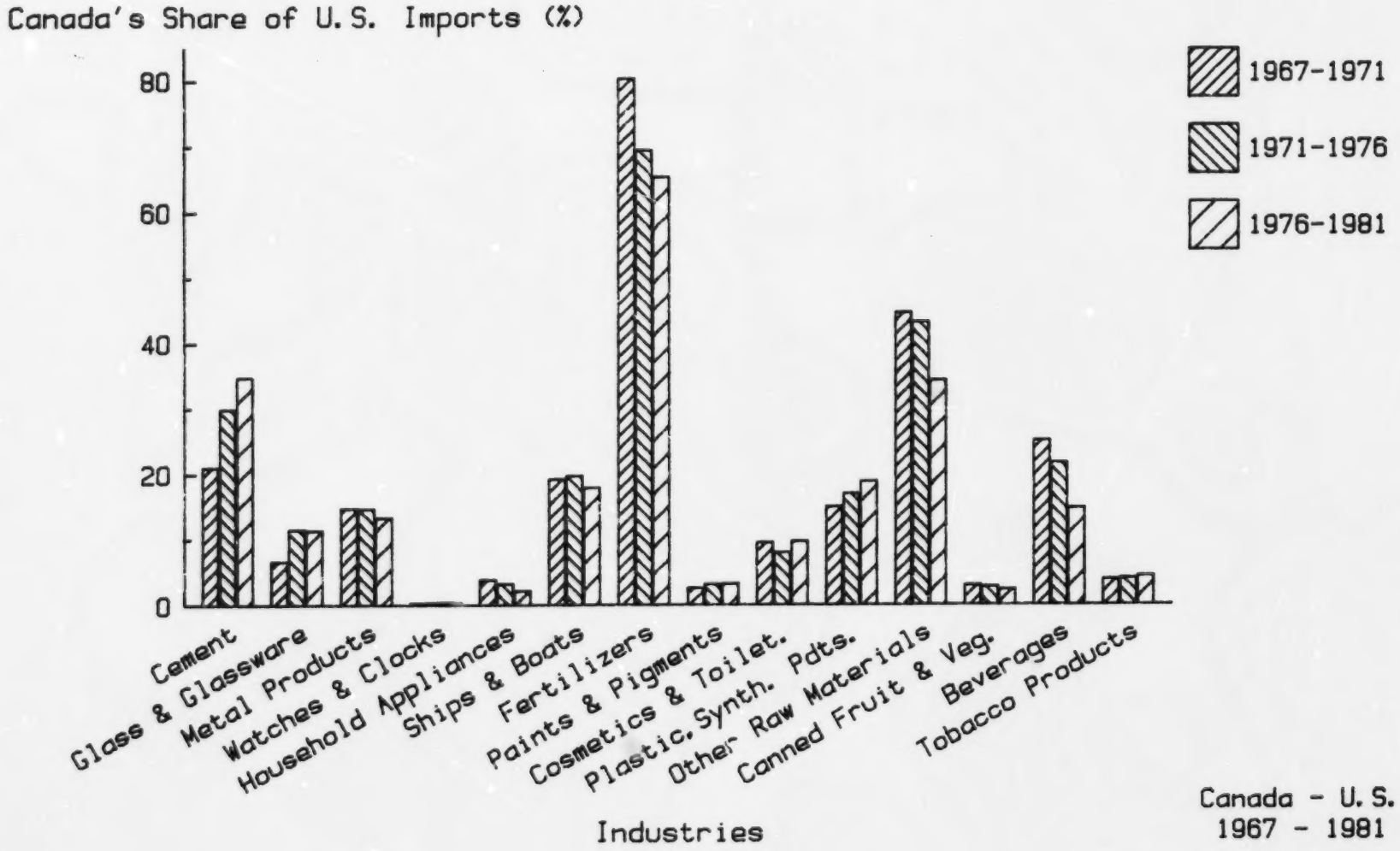
Serious declines in the market shares of the High Technology industries are a cause for concern



Canada - U.S.
1967 - 1981

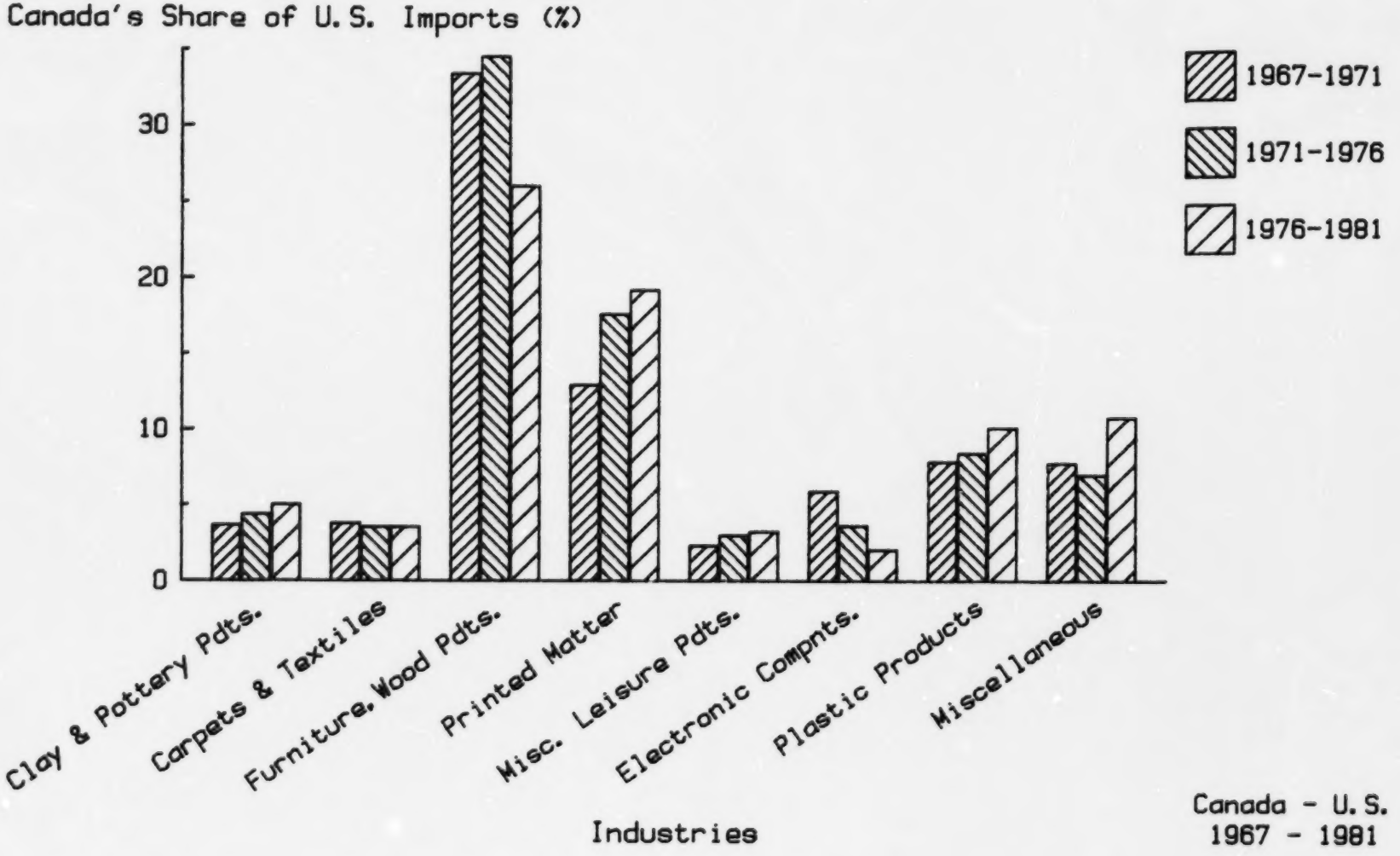
14.5

Considerable variation can be seen in the market share performance of Capital-Intensive industries



14.6

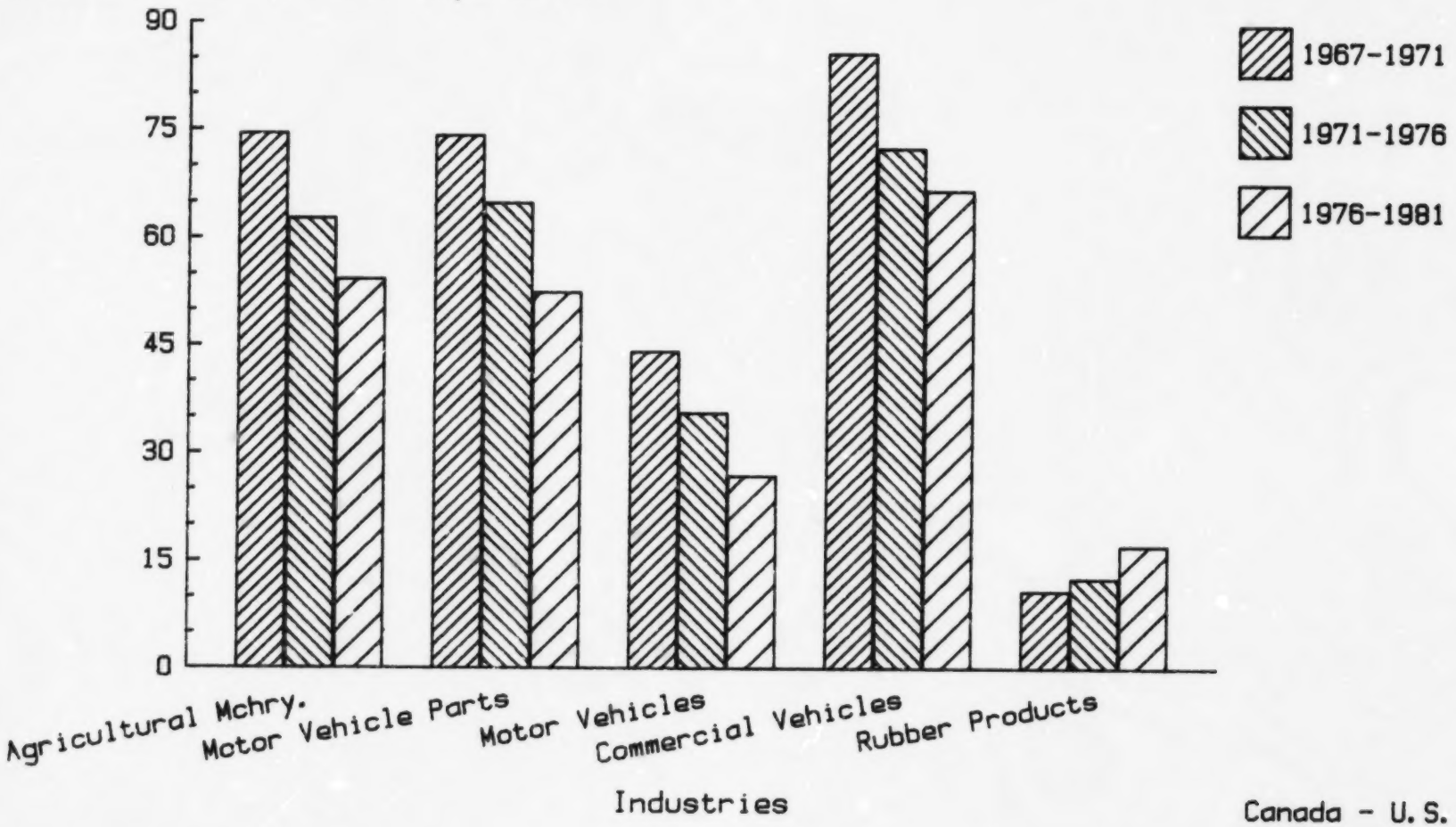
Several industries in the Labour-Intensive sector improved their share of the U.S. import market



Canada - U.S.
1967 - 1981

14.7

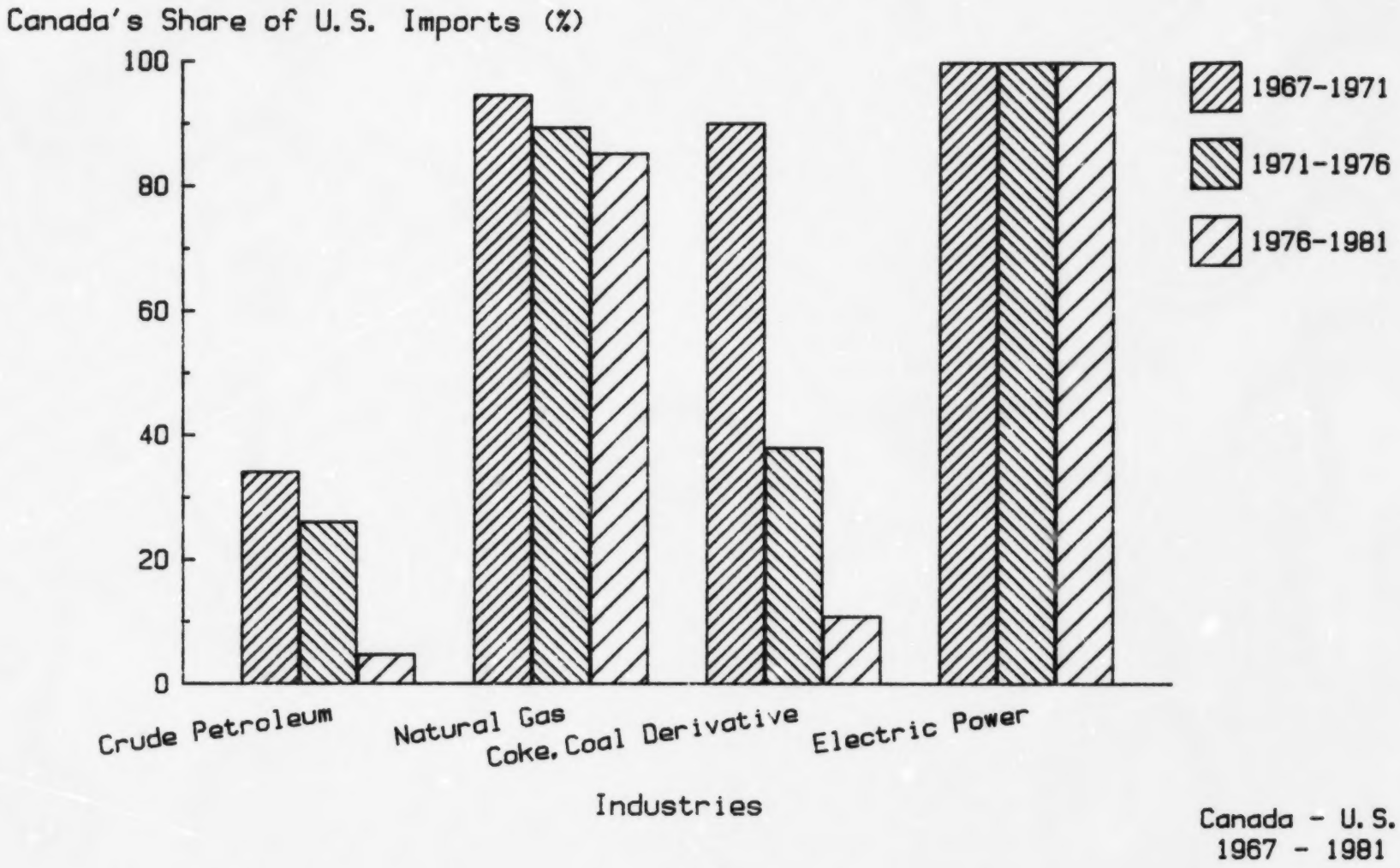
The Transport Equipment sector industries fared poorly in the U.S. market



Canada - U.S.
1967 - 1981

14.8

The market share performance of the Energy sector was determined largely by government policy



Canada - U.S.
1967 - 1981

Chapter 15
THE FISCAL AND MONETARY CLIMATE

This study has focussed on structural policies and the processes by which individual sectors and industries can be made more effective in the accomplishment of national economic goals. Before we conclude, it is important to comment on the potential impact of macro-economic policies. These too will have a substantial impact on whether or not the sectors and industries we have discussed will fulfil their economic goals.

The existing configuration of fiscal and monetary policies has given rise to an economic climate that is less than healthy for the manufacturing sector. Higher exchange rates encourage imports, place competitive pressure on marginal domestic manufacturing, and hurt exports. They also tend to exacerbate unemployment. Similarly, high interest rates have not helped the manufacturing industry. Capital investment is difficult to contemplate when interest rates are very high, and consumer demand for interest-elastic products (such as cars, durables) tends to drop off. Unemployment created by this economic climate places further fiscal burdens on the system, adding to the government's social expenditures.

The overall tenor of Canada's fiscal policy during the last twenty years has leaned towards maintaining a *loose fiscal climate* in which government revenues and expenditures have been allowed to rise rapidly to pay for social programs and socially directed industrial intervention. In recent years, these policies have been combined with tight monetary policies to counteract inflation. Deficits are therefore being financed at high interest rates and through foreign borrowing. As a result, Canada's foreign exchange rate has been higher than would have been the case had fiscal policy been tighter and monetary policy somewhat looser.

These four aspects of macro-economic policy — interest rates, federal deficits, the foreign exchange rate and inflation — have to be taken into account in evaluating the potential impact of structural policies. Given the complex interdependence of these factors and the nature of linkages between the Canadian economy and the United States and between Canada and the rest of the world, the federal government has little room to manoeuvre on the first two and modest direct influence on the latter two. Further, despite its best efforts, the government has made little progress in reducing the unemployment rate, which is also considered a key indicator of the country's macro-economic performance.

To further compound the difficulty of using macro-economic instruments, there is much ambiguity about the relationship between short- and long-term consequences. Actions to deal with problems in the near future run the risk of causing long-term harm. The complexity of linkages between cause and effect and second order impacts and so on is well known and will not be repeated here.

Two things are clear. One is the danger of high real interest rates, which choke off consumer demand for durables, houses and big-ticket products and which discourage investment in all areas of the economy. The other is the need to ensure a low enough exchange rate to maintain the competitiveness of Canadian exports. The latter is critical to keep export industries operating at a sufficiently high rate of output for companies to remain profitable.

Since domestic interest rates and short-term changes in the foreign exchange rates are closely linked and are managed largely through the Bank of Canada's manipulation of the discount rate on Treasury bills and its operations on the foreign exchange market, these policies have to be considered in tandem. As long as Canadian inflation rates remain reasonably close to US inflation rates, the US interest rate will be the prime influence on the level of Canadian interest rates. A "made-in-Canada" interest rate policy is neither feasible nor desirable. If Washington chooses to continue policies that will lead to high interest rates, there is little that Canada can do to keep its interest rates low. Traditionally, inflation-adjusted differentials between the Canadian and the American rates have been maintained to prevent large net outflows of capital. On the other hand, when US interest rates drop, Canada could choose to retain a high interest rate policy for some period of time. In our view, this would not be advisable, because high interest rates will dampen consumer demand and industrial investment. It will create upward pressure on the Canadian dollar, which will move above the level at which exports can be profitably priced and yet remain competitive. If carried far enough, interest rates kept too high above the US level will trigger a recession.

The exchange rate of the Canadian dollar against its US counterpart is an obvious symbol of developments in the macro-economic environment. It is also used as a barometer of the relative prosperity of Canadians versus Americans. Therefore, policy-makers are reluctant to advocate a low foreign exchange rate. Suggesting that the Canadian dollar should be worth 70 US cents on a permanent basis can be taken to imply that one believes that the Canadian standard of living will remain at 70 per cent of the American. Such arguments appear intuitively appealing and are difficult to counter with simple logic. But comparison of standards of living between the two countries is really much more complex, because of the necessity to take account of differences in wages, income distributions and prices, as well as a host of intangibles.

Unappealing as its popular impact may be, the long-term prospect of a foreign exchange rate in the region of 70 US cents to the Canadian dollar is healthy for Canada's industrial portfolio. Exports will remain strong at that exchange rate; imports will continue to remain relatively expensive, encouraging the domestic manufacturing of products that can compete with imported goods. Interest rates will have to be kept relatively low to maintain a low exchange rate, thus encouraging consumption and industrial investment.

In the longer run, inflation rates and the federal deficit will alter the ability of the government to continue a policy of low differentials between Canadian and American interest rates. If the federal deficit is not reduced significantly, domestic interest rates will rise under the upward pressure on demand for funds from increased borrowing by governments. A strict and deliberate policy of restraint in government spending is necessary for the long-term health of the economy.

Similarly, restraint in public sector wage settlements is absolutely essential. Not only does the public sector account for a significant portion of the workforce, but also high wage settlements in the public sector create pressures for similar increases in the private sector, which in turn will set in motion an inflationary wage-price spiral. By maintaining wage increases in the public sector below the rate of inflation, the government can set a good example. While this may provide a confrontation with public sector unions, public opinion will probably support such policies partly because of the widespread belief that public servants are overpaid.

These four sets of policies — wage restraint for public servants, definite progress in reducing the deficit, maintaining low differentials between American and Canadian interest rates, and keeping the Canadian dollar at approximately 70 cents US — will go a long way towards establishing the macro-economic climate within which the structural policies described in the preceding eight chapters will work best. Together, they provide the best combination of policies this country can follow to achieve the immense potential that is inherent in its people and its vast natural endowment.

TECHNICAL APPENDIX
Data Sources and Methodology

The trade flow data used in this study were obtained from the CHELEM database of the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) in Paris. This is a government-sponsored project to create and maintain a harmonized database on world trade. The data consist of worldwide trade flow information, according to an industrial sector classification of 71 groups. The data are annual, from 1967 onwards.

The "harmonization" procedures used to create the CHELEM database are described in detail in the Datafrance D2 Manual, issued by GSI-ECO of Paris, France (July 1984). The original data are obtained from magnetic tape versions of the UN International Trade Statistics (SITC Rev. 1). The import and export series are reconciled with each other by means of an international freight rate matrix to convert CIF values to FOB. Differences between import and export declarations of each country pair are identified, and appropriate adjustments made to bring them into harmony. In general, data from developed countries are given greater weight than data from developing countries, and import statistics are given greater weight than export statistics. The result is a single set of trade flow statistics, which are presented in an industrial classification. This is shown below in Exhibit A1.

ERCA, the Export Revealed Comparative Advantage, was calculated separately for each year from 1967 to 1981 for each industry of a particular country according to the following formula:

$$ERCA_A = \frac{\text{the country's share of world exports for industry A}}{\text{the country's share of world exports for all industries}}$$

The Relative Market Share was calculated separately for each year from 1967 to 1981 for each industry, according to the following formula:

$$\text{Relative Market Share} = \frac{\text{the country's share of world trade for industry A}}{\text{the combined share of the three largest exporting countries for that industry other than the country in question}}$$

The growth rates for ERCA or Relative Market Share mentioned in this study have been calculated by fitting a least squares log-linear line to the annual data and using the slope of this line as an estimate of the annual growth rate. Similarly, the intercept is used as an estimate of the starting-point of growth trends.

Strategic Clusters

The strategic clusters were formed on the basis of examining data about these industries, and following the procedures summarized below:

1. The Mature Commodity Sector consisted of industries whose major products are undifferentiated commodities, in which the rate of growth in world trade was low.
2. The High Technology Sector consisted of the ten industries that ranked the highest in the United States in the ratio of R&D expenditures to sales, as reported in a study by the US Department of Commerce (Kelly, 1977).
3. The Capital-Intensive Sector consisted of fourteen industries that had a high ratio of value added per employee, other than those industries that fell into the High Technology Sector.
4. The Sunset Sector consisted of industries where real value added and/or employment declined over the period of this study (1967-81).
5. The Labour-Intensive Sector consisted of industries that had a low ratio of value added per employee, other than those industries that came under the Sunset Sector.
6. The Transport Equipment Sector consisted of vehicle assembly and parts industries. These industries are treated separately in this study because the 1965 Canada-US Auto Pact has created a distinctive strategic environment for them.
7. The Energy Sector consisted of hydrocarbon-based industries and electric power generation. Again, the reason for segregating these industries into their own strategic sector is that their strategic environment is heavily influenced by the federal government's energy policy.
8. The Renewable Resources Sector consisted of industries involved in the exploitation of renewable natural resources. They do not include downstream processing of these resources. These industries are included in the classification for the sake of completeness, but they are not discussed in this study.

See Exhibit A2 for further details.

Exhibit A1:
Industrial Classification Used in This Study

BA Cement and plastics
BB Ceramic, tiles and bricks
BC Glass, float glass and derivatives
CA Iron and steel products
CB Basic iron and steel
CC Non-ferrous metals
DA Spinning and weaving products
DB Manufactured clothes
DC Hosiery and knitwear
DD Carpets, other finished textiles
DE Leather, furs and shoes
EA Wood products
EB Furniture and derivatives
EC Pulp and paper
ED Printing products
EE Miscellaneous manufactured products N.E.S.
FA Molded foundry products
FB Metal and mechanical products
FC Motors, turbines, pumps
FD Machines and agricultural equipment
FE Machine tools
FG Specialized machinery
FH Weapons
FI Precision instruments
FJ Clocks and watches
FK Photographic equipment
FL Electronic components
FM Domestic electronic products
FN Telecommunication products
FO Office equipment and computers
FP Household electric equipment
FQ Heavy electronic equipment
FR Small electric equipment
FS Spare parts, motor vehicles
FT Automobiles and motorcycles
FU Commercial vehicles
FV Ships
FW Aerospace
GA Mineral chemicals
GB Fertilizers
GC Organic chemicals
GD Paints, varnishes, tints
GE Cosmetics and toiletries
GF Pharmaceutical products
GG Plastics, fibres, resins
GH Plastic products
GI Rubber products
HA Iron ores
HB Non-ferrous ores
HC Raw materials N.E.S.
IA Coal and lignite
IB Crude petroleum
IC Natural gas
ID Other primary energy products
IG Coke, coal, lignite derivatives
IH Petroleum derivatives
II Natural gas
IJ Electric power
JA Cereals
JB Other food products
JC Agricultural products for industry
KA Cereals
KB Vegetable, animal fats
KC Meat, poultry, fish
KD Canned meat, poultry, fish
KE Canned fruit, vegetables N.E.S.
KF Sugar, chocolate candies
KG Food for animals
KH Beverages (incl. alcoholic)
KI Tobacco
MISCEL Miscellaneous N.E.S.

Note: N.E.S. means Not Elsewhere Specified

Exhibit A 2: Strategic Clusters

	Real Growth in World Exports (%)	Export Revealed Comparative Advantage	Average Annual Employment	Real Exports ($ billion)	Real Valued Added ($ billion)	Relative Market Share (%)	Change in Relative Market Share (%)
A. Commodity Sector							
Non-ferrous Ores	1.4	416	30911	2.54	0.93	42.8	−13.34
Meat, Poultry & Fish	4.2	135	34412	1.24	1.0	13.8	1.03
Basic Iron & Steel	−4.1	56	56384	1.31	2.3	4.3	1.12
Lumber & Wood Materials	−1.2	187	96138	0.75	2.6	17.3	0.72
Pulp & Paper	−1.7	612	127164	8.64	5.8	35.3	0.13
Coal & Lignite	−9.7	153	7420	1.14	0.14	9.9	2.78
Iron Ore & Scrap	−1.7	325	7107	1.50	0.22	32.7	−1.29
Non-ferrous Metals	0.6	236	29367	4.22	0.23	34.0	−7.13
Petroleum Derivatives	−2.9	46	20920	1.78	1.2	6.4	1.32
B. Sunset Sector							
Heavy Electrical Equipment	−6.3	25	50473	0.11	1.5	2.0	−0.64
Yarn & Fabrics	−3.4	13	35775	0.22	0.9	1.2	−0.60
Clothing	−1.5	9	49499	0.08	1.7	0.7	−1.23
Leather Products, Furs	−0.7	27	28722	0.28	0.6	2.1	−0.82
Confectionaries	−4.9	17	45080	0.11	1.3	3.0	0.42
Hosiery & Knitwear	−1.8	3	21165	0.02	0.4	0.2	−0.17
Foundry Products	−1.7	61	27736	0.25	1.4	5.7	0.72
Iron & Steel Products	−1.1	64	75091	0.52	2.8	4.1	0.19

	Real Growth in World Exports (%)	Export Revealed Comparative Advantage	Average Annual Employment	Real Exports ($ billion)	Real Valued Added ($ billion)	Relative Market Share (%)	Change in Relative Market Share (%)
C. High Technology Sector							
Precision Instruments	4.3	52	18275	0.39	0.5	3.2	−0.89
Chemicals	2.1	156	41636	1.92	2.2	14.7	1.42
Aerospace	10.0	100	30681	0.96	1.1	4.9	−1.19
Pharmaceuticals	−0.2	16	15354	0.09	0.5	1.4	−0.24
Computers & Office Equipment	5.4	89	11586	0.77	0.4	5.8	−0.48
Consumer Electronics	0.3	18	6082	0.12	0.2	0.9	−0.39
Photographic Equipment	1.1	26	N/A	0.11	0.2	1.4	0.26
Special & Misc. Machinery	1.3	101	16168	1.92	2.7	7.1	−2.06
D. Capital-Intensive Sector							
Cigarettes, Tobacco Products	7.9	6	8792	0.01	0.4	0.4	−0.03
Metal Products	0.2	58	85886	0.95	3.3	4.8	−0.18
Paints & Pigments	−1.8	7	7481	0.02	0.3	0.5	−0.10
Fertilizers	5.5	255	1090	1.20	0.1	22.7	0.27
Cement	−1.0	71	15663	0.15	0.7	8.2	−0.89
Watches & Clocks	0.4	13	1410	0.04	0.1	0.9	−0.38
Glass & Glassware	−0.4	41	11753	0.11	0.4	3.4	−0.47
Canned/Preserved Fruits	1.8	29	17597	0.09	0.5	3.8	−0.71
Beverages (incl. Alcoholic)	6.7	96	33063	0.41	1.7	6.5	−3.31
Ships & Boats	−14.7	25	19030	0.20	0.6	1.4	0.31
Cosmetics & Toiletries	4.1	19	13941	0.12	0.5	1.3	−0.04
Plastics & Synthetic Fibres	2.0	35	5730	0.51	0.5	2.7	0.31
Household Appliances	−0.4	13	14394	0.04	0.4	1.0	−0.14
Other Raw Materials	2.0	304	13878	1.29	0.6	37.7	0.15

(cont'd)

	Real Growth in World Exports (%)	Export Revealed Comparative Advantage	Average Annual Employment	Real Exports ($ billion)	Real Valued Added ($ billion)	Relative Market Share (%)	Change in Relative Market Share (%)
E. Labour-Intensive Sector							
Clay & Pottery Products	−0.1	24	4613	0.10	0.1	1.8	0.26
Furniture & Misc. Wood Products	1.0	83	54863	0.38	1.2	6.4	−3.66
Plastic Products	0.6	41	30559	0.12	0.9	3.4	0.09
Electronic Components	3.1	23	N/A	0.11	0.2	1.4	−1.57
Misc. Leisure Products	0.9	26	17354	0.54	0.7	2.5	−0.07
Printed Matter	−1.1	54	100046	0.18	3.0	3.7	−0.20
Carpets & Misc. Textiles	−0.5	21	22425	0.09	0.6	2.8	0.62
Miscellaneous	7.0	16	21914	0.51	0.5	4.4	1.64
F. Transport Equipment Manufacturers							
Commercial Vehicles & Railways	−0.6	231	15128	2.98	0.8	16.5	1.26
Agricultural Machinery	−0.8	167	75506	0.98	0.6	14.2	−0.65
Motor Vehicle (Private)	−0.6	238	48951	6.19	1.7	14.4	−8.74
Spare Parts (Motor Vehicles)	−0.7	256	53096	3.80	2.3	17.2	−2.38
Rubber Products	−0.4	76	28868	0.37	0.9	6.2	1.54
G. Energy Sector							
Electric Power	1.0	310	N/A	0.36	2.86	37.3	14.50
Coke, Coal Derivatives	−15.8	23	N/A	0.03	0.01	1.4	−0.07
Crude Petroleum	−4.0	28	12332	3.70	1.31		
Natural Gas	11.4	572	N/A	5.48	N/A	39.9	−4.15

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Canada Can Compete! Strategic Management of the Canadian Industrial Portfolio

Joseph R. D'Cruz and
James D. Fleck

Canada can compete in international markets, but not, the authors contend, under the present national economic strategy. Policies that redistribute income and allocate resources through government fiat have weakened Canada's ability to transform its manufacturing sector to meet the new competitive challenges.

D'Cruz and Fleck compare the performance of seventy-one Canadian industries from 1967 to 1981 with industries in Japan, the United States, Britain and France. To enhance the competitiveness of Canadian manufacturing, the authors propose a differentiated industrial strategy, one that emphasizes growth and development. Government, they say, must play a "hands-off" role in Canada's market economy, limiting itself to establishing the rules of the game. The authors recommend, in addition, macro-economic policies that would reduce the federal deficit, restrain wages for public servants, preserve low differentials between Canadian and American interest rates, and maintain the Canadian dollar at 70 cents US.

Controversial though they may be, these are the measures, the authors conclude, that Canada must adopt to compete effectively in international markets and, thus, to sustain the country's present standard of living.

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